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THE

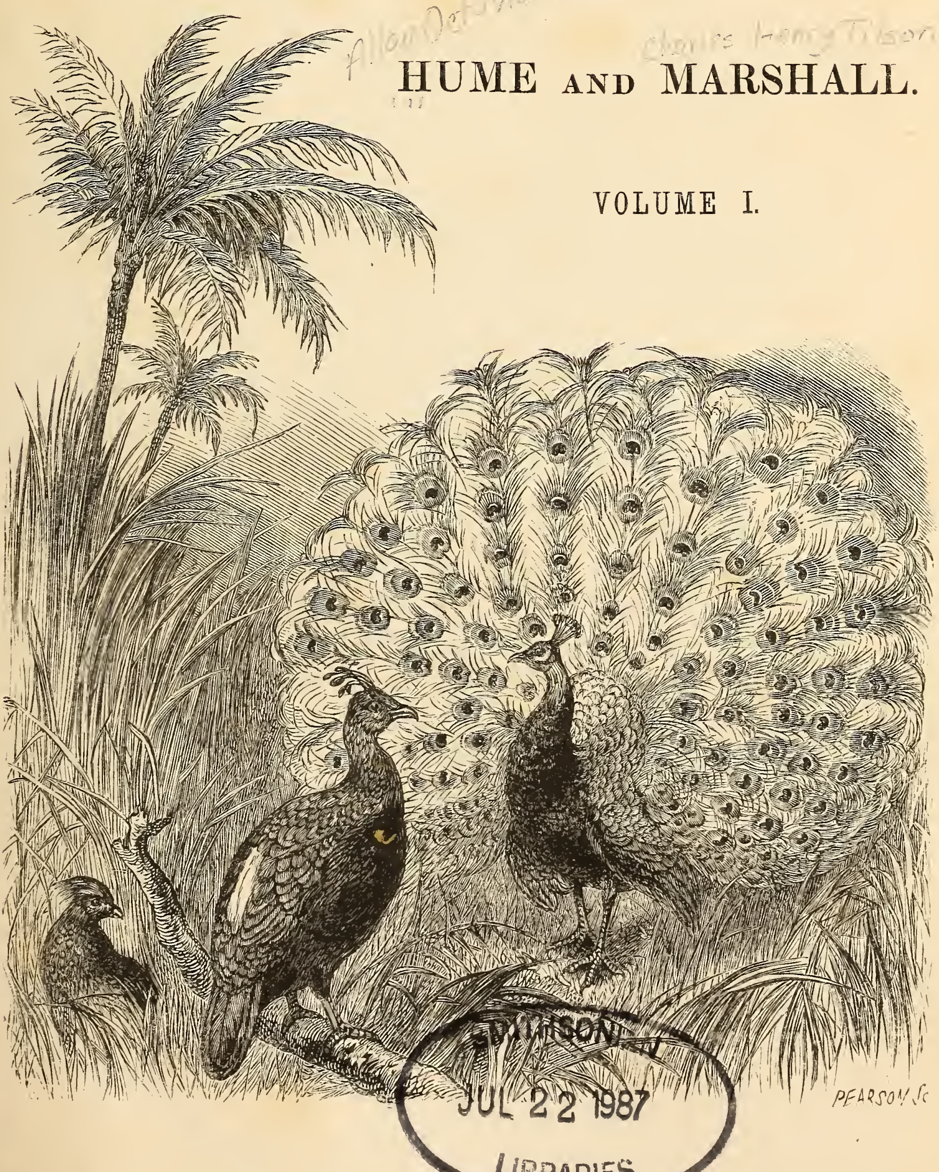
GAME BIRDS

OF

INDIA, BURMAH, AND CEYLON.

HUME AND MARSHALL.

VOLUME I.



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PREFACE.

IN presenting to our Subscribers this First Volume of "THE GAME BIRDS OF INDIA," we feel keenly how much we shall need their indulgent consideration.

The plates, the most important portion of the work, and to secure the proper preparation of which Captain Marshall devoted nearly an entire year's leisure at home, are by no means all that we could have desired.

In the first place having 150,000 plates to produce within a limited period, we were compelled to have recourse to chromo-lithography. Great as may seem the delay that has occurred in the appearance of this work, this would have been increased by some *years* had we adhered to our original design of giving hand-coloured plates. Chromo-lithographs, though more uniform in their tints, (*every* copy of any plate being infallibly exactly like every other copy, while hand-coloured plates always vary a good deal in tone) are yet always more harsh and staring, and admit of less elaboration of delicate details. Some, at any rate, of our plates are really beautiful for chromos, but the best chromo is not equal to a *really* good hand-coloured plate. But it would have taken five years to get 150,000 plates *really* well coloured by hand, and as for those coloured by hand by indifferent workmen, they are often worse than chromos. Here therefore, we were helpless.

In the second place, we have had great disappointments in artists. Some have proved careless, some have subordinated accuracy of delineation to pictorial effect, and though we have, at some loss, rejected many, we have yet been compelled to retain some plates which are far from satisfactory to us. Too often, again, though exact details of the colours of soft parts were furnished to the artists, these have been wrongly represented, in some cases glaringly so. Throughout, both as regards the

names of species (often misspelt), and the colours of the soft parts, the text and not the plates must be relied on.

Yet in this matter of the plates, indifferent as the results may seem, Captain Marshall took an infinity of pains, and but for his labours this work could never have appeared.

The text, for which Mr. Hume is mainly responsible, is likewise by no means what he would have wished to make it. A work like this requires leisure; time to consult all that has ever been written by others in regard to each species; time to weld all this together with personal and unpublished experiences into a harmonious whole; time to re-write, revise and polish. As it is, amidst the pressure of other work of all kinds, Mr. Hume has only been able to jot down roughly his own experiences, supplementing these by such notes of others, published and unpublished, as he chanced to have available.

The printing, too, had necessarily to be done in India, and though extremely good for this country, cannot compare in finish and general appearance with similar work turned out at home, where sheets, as printed, can be passed between hot rollers, giving a gloss and finish to the pages impossible to be attained in any other manner.

But the Authors' case is simply this: the work is one much wanted and long called for; no one else appeared willing to incur the trouble and great expense involved in its preparation. Indifferent as it is, whether from an artistic or literary point of view, it will yet, it is believed, enable sportsmen to identify every game bird they may shoot, and ascertain something of its distribution in India and elsewhere, of the places in which it may be sought, and of its habits, food, and nidification so far as these are yet known, and after all, imperfect as it may be, it is the best that, circumstanced as they have been, the Authors could possibly produce.

ALLAN HUME.

SIMLA, 1*st July* 1879.

(Slip to face page 2 of the Preface.)

TO THE READER.

As we hope, hereafter, to publish an improved and revised edition of this work, we shall be grateful for *any* scraps of information, *however* small, that *any one*, into whose hands "THE GAME BIRDS" may fall, may be able to furnish us, supplementary to what we have herein recorded, in regard to the Vernacular names, distribution, habits, food, notes, nidification, &c., &c., of *any one* of the species included in this work.

No doubt we have fallen into many errors, possibly we may have omitted some species ; any one pointing out such errors or omissions will confer a great favour on us.

Letters may at all times be addressed to me to "*Rothney*, SIMLA ;" wherever I may, at the moment, chance to be, such letters, if I am still in the land of the living, will always be promptly forwarded to me.

ALLAN HUME.

SUPPLEMENTARY PREFACE.

A FEW words of explanation are due from me to our readers to account for the anomaly of a work whose cover bears the name of two authors being written by only one of these.

A work like this, however, can only (if it is to form a consistent whole) be actually written by one person, and it became necessary, therefore, to divide the work involved in the production of the book in some other way than by assigning the preparation of half the text to one author and of the other half to the other.

Two quite distinct and equally troublesome undertakings were included in the preparation of The Game Birds—the one the compilation of the text; the other the superintendence of the preparation of the enormous number of plates required. Mr. Hume desired to write the text, and the humbler, though perhaps not much less laborious, task fell to my share.

I have performed my portion of the work to the very best of my abilities, and yet personally feel almost as if I were sailing under false colors in appearing before the world as one of the authors of this book; but I allow my name to appear as such, partly because Mr. Hume strongly wishes it, partly because I do believe that as Mr. Hume says this work, which has been for years called for, would never have appeared had I not proceeded to England, and arranged for the preparation of the plates, and partly because with the explanation thus afforded no one can justly misconstrue my action.

C. H. T. MARSHALL.

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F. Waller, Chromo-Lith. 18, Hatton Garden, London.

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OTIS TARDA.

THE GREAT BUSTARD.

Otis tarda, *Linné.*

Vernacular Names.—[*None?* .]

ONCE, and once only, as yet, has the Great Bustard of Europe been obtained within the limits of the British Empire in the East.

On the 23rd of December 1870, a couple of my collectors, who were working at Mardán, under the direction of Dr. J. A. Johnson, then of the Guides, came across a party of Bustard in some fields of mustard and giant millet, belonging to Hashtnagar and just north of the Kábul River. The birds were very shy, but my old jamadár succeeded, by driving a buffalo in front of him, in getting within shot and knocking over a female.

This Hashtnagar is within a few miles of the very most north-westerly point of British India proper, and is in lat. 34° N., and long. 71° 45′ E.

This party of Bustard did not leave the neighbourhood for some weeks, but they were so wary that, despite all the efforts of many sportsmen, Native and European, no second specimen could be obtained; and notwithstanding repeated subsequent enquiries from officers stationed at Mardán, Michni and Shabkadar, in the midst of which Hashtnagar lies, I have never been able to learn that the Great Bustard has again revisited the locality.

Hutton did not meet with this species in Affghanistan, nor has it as yet been recorded (though it may occur there) from any part of Persia, east of the Caspian. Its range may be roughly said to embrace nearly the whole of Europe, except the more northern portions (it used to be not uncommon in Great Britain, though now extinct there), the most northerly parts of Africa, (Algeria and Morocco), Asia Minor, North-West Persia, and probably nearly the whole of Asia, between the 38th and 60th parallels of north latitude, as far east as the Bureja Mountains (Radde,) and the plains of Northern and Central China, (David). Prjevalski met with single birds in the Great Gobi Desert, and found them breeding about Lake Hanka.

IN EUROPE they are seen at times in flocks or droves of fifty and upwards, and very commonly in parties of considerable size;

but I apprehend that only small parties will ever be found to straggle within our limits, and I do not expect that they will ever prove to extend their wanderings east of the Indus.

Of their habits, I personally know nothing; but as described by European writers, they are precisely similar to those of our Great Indian Bustard.

Our single Indian specimen had fed entirely on green mustard leaves; and I may note that, according to all authorities, it chiefly feeds on grain and leaves, though also eating insects, and does not appear to be ever the coarse feeder that its Indian ally is.

OF COURSE, they never would breed within *our* limits. In Europe they lay about the end of May, sometimes two, sometimes, it is said, three eggs. These eggs are placed in a slight depression in the soil, usually in some grain field, often unlined, at times thinly lined with straws or grass. They closely resemble some varieties of the eggs of the Great Indian Bustard, being "light brownish olive, or dull olive green, smudged and blotched with more or less distinctly defined dark brown blotches and irregular spots,"* but do not seem to vary nearly to the same extent in colour as do those of our Indian bird. Dresser gives the size of ten as 3·075 to 3·47 inches in length, and 2·075 to 2·18 in breadth.

OUR ONE Indian specimen, which was a female, was measured in the flesh by Dr. Johnson, who also recorded the colours of the soft parts. It measured :—Length, 33 inches; expanse, 63; wing, 18·25; tail from vent, 8·5; tarsus, 4·5; the greatest length of the foot was 2·5; and its greatest width, 2·75. It weighed 8·25lbs. The legs and feet were brown; bill lavender; irides bright brown.

The males are very much larger; they average 45 inches in length; wing, 26; tail, 11; and tarsi, 6·2; and they weigh at times, as Montagu says, and Irby (B. of Gibraltar, p. 149) confirms this statement, fully 30lbs.

THE PLATE, though stiff and inartistic, gives a tolerably good general idea of the bird; but it must not be supposed that the scales on the legs are the enormous things depicted by the artist (who probably had the back of a scaly Pangolin in his mind's eye when he drew them). Instead of only three, there are about ten rows of scales on the sides of the tarsi, and none of these scales are particularly prominent; neither bill nor legs are quite rightly coloured. The plate represents a male; the female wants the rufous pectoral band, as also the conspicuous whiskers of the male. In other respects the plumage of the sexes is very similar.

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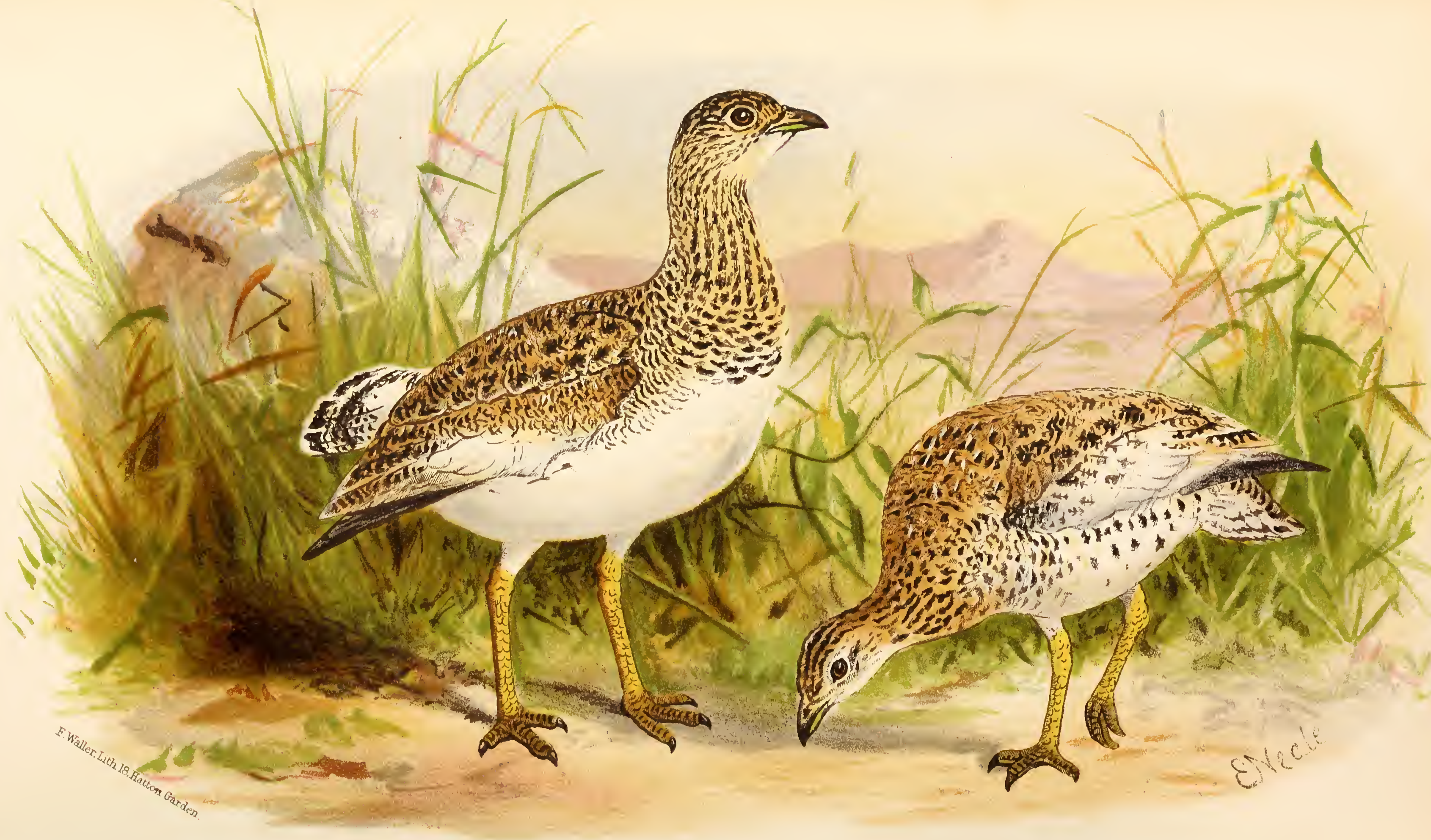
* Dresser.



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OTIS TETRAX

THE LITTLE BUSTARD.

Otis tetrax, *Linné.*

Vernacular Names.—[Chota tilur.]

THE Butterfly Houbara, as Indian sportsmen in the North-West have not inappropriately designated the Little Bustard of Europe, is a regular and tolerably abundant winter visitant to the northern portions of the Trans-Indus Punjab.

Cis-Indus, they can only be considered rare and occasional stragglers. In December 1878, Colonel Macleod, R.A., shot a fine male of this species, near Gurdáspur, and about the same time Mr. O. Greig shot a female at Bálawála on the bank above the Ganges Kádar in the Sahāranpur District; and, though others must doubtless have occurred in the submontane tracts of the Punjab and North-Western Provinces, these are, I believe, the only instances on record of their being brought to bag.

Out of India, the Little Bustard is common in suitable localities in Southern Europe and Northern Africa, adjoining the basin of the Mediterranean. It straggles to Northern Europe, even to the British Islands and Sweden. It occurs, and very numerously, in some places, in Syria, Asia Minor, the Caucasus, Northern Persia,* Kábul and Northern Beluchistan, and throughout the tract of country lying between the Caspian and Western Yárkand, whence we have specimens from Yangihissar, Kashgar and other places in the plains between these and Sanju.

It does not appear to go north across the Tian Shan, or eastwards into Mongolia or China; neither Radde, Prjevalski, nor David include it in their lists.

THE FLIGHT of this species is very different to that of our other Bustards; they often rise to a great height, and will flutter and twist about in the air (though they *can* fly with considerable rapidity and straight enough) in a way that has earned for them the local trivial name above alluded to. Whilst on the wing, they call continuously.

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* The birds seen on one of the Islands of the Persian Gulf by Blanford (Zool. Pers. 287) were probably Houbara, which I have ascertained breed on some of these.

At times, especially early and late, they are very wary, but at other times, chiefly, I think, when the sun is high and hot, they will lie as close as a Button Quail.

They are often shot, bags of ten and a dozen couple having been reported ; but it is chiefly as a quarry for Falcons that they are esteemed, and in the neighbourhood of Mardán, hawking them with the Saker or Chargh Falcon used to be a standing amusement.

They are broad-breasted, compact, strong birds, but withal easily killed, though perhaps less so than Florican.

It is almost invariably and solely in the mustard fields that they are met with about Mardán. They rise suddenly with a great pat-pat of the wings ; and, though quite invisible until they rise, startle one with the great breadth of pure white they suddenly reveal, the whole of the secondaries and much of the primaries being white.

Some people consider this bird a delicacy. For my part, I have found the flesh dark and hard, and with a rather unpleasant flavour. With us, they feed chiefly on the leaves of the Sarson, a kind of mustard, but I have also found remains of insects and land shells in their stomachs ; and in Europe they are said to eat slugs, snails and small reptiles, which, looking to the omnivorous tastes of our Great Indian Bustard, seems probable enough.

WITH US, they do not breed, though they are said to breed in Beluchistan and Affghanistan. In Europe, they lay in May, laying three or four eggs, like other Bustards, on the ground, in a small unlined or thinly-lined depression in the soil. Where many eggs (and as many as twelve have been thus met with) are found in the same nest, they are, I believe, the produce of more than one female.

The eggs are broad ovals, longer than, but not so broad as, those of the Lesser Florican or Likh, which they otherwise closely resemble. They are always glossy, and vary from light olive green, more or less blotched with dark brown, to a uniform dark olive brown. Length, 1·9 to 2·1 ; breadth, 1·47 to 1·55.

I DO not find that the sexes differ materially in size, although the males unquestionably average rather larger and perceptibly heavier.

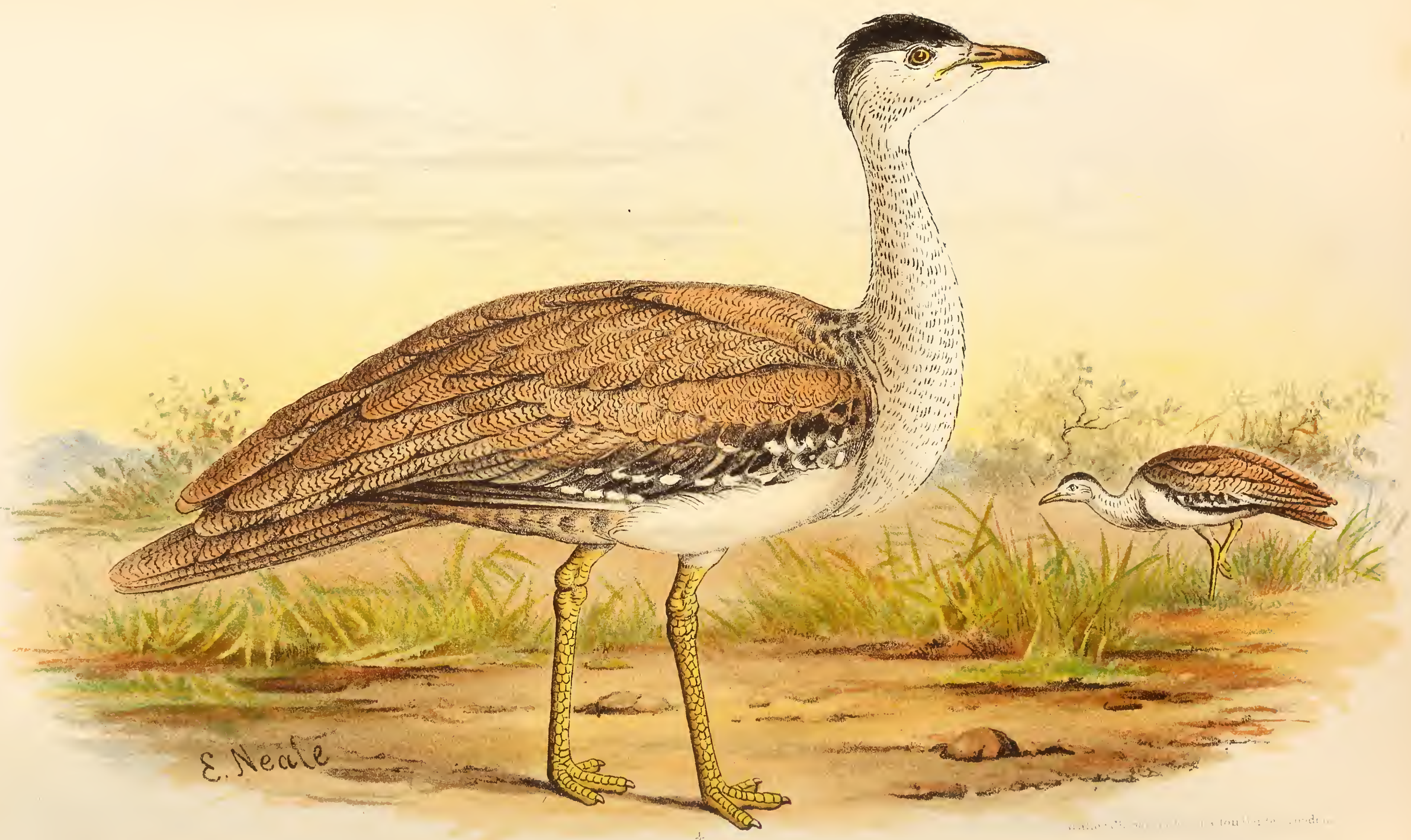
The following are dimensions, &c., recorded of Indian specimens:—Length, 17 to 19 inches ; expanse, 33.5 to 36 ; wing, 9.5 to 10·1 ; tail, 4 to 5 ; tarsus, 2·2 to 2·66 ; bill from gape, 1·5 to 1·6. Weight, 1·5 to 2lbs.

The colours of the soft parts vary a good deal ; the legs and feet are yellow, dusky yellow, greenish yellow, the feet often browner or dingier ; the bill is blackish, greenish black,

dusky horny or brown, generally paler on culmen, and bluish grey, greenish or yellowish at the base, and the irides vary from light yellow to orange.

THE PLATE is an excellent one of the bird in winter plumage, in which, so far as I know, we alone obtain it; but I ought to mention that the male in summer assumes a very different appearance, having then the sides of the head and the throat to the length of two inches greyish blue, with an inferior black margin, succeeded by a narrow ring of white, that colour extending more than an inch downwards in front in a pointed form. The middle of the neck, all round, for the length of two inches and a half is deep black, that colour being succeeded below by a half collar of white and another of black.

I must add, that in many of my specimens the black markings on the upper surface are more predominant than is depicted in the plate, giving the bird altogether a darker appearance; as also that occasionally the whole lower surface has a more or less buffy tinge.



EUPODOTIS [4] EDWARDSII

THE GREAT INDIAN BUSTARD.

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Eupodotis edwardsi, *J. E. Gray.*

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Vernacular Names.—[Toogder, *Punjab ;* Sohun chirya, Gugumbher, Hookna, *Gwalior, Jhánsi, &c. ;* Gurayin, *Hariána, Punjab ;* Hoom, (Marathi,) *Khandesh, Násik, Betul, Central Provinces, &c. ;* Kara-dhouk, Maldhouk, *Deccan ;* Gurahna, *Sind, Thar and Párkar ;* Butt-meka, Bat-myaka, (Telugu), Heri-hukki, Arl-koojina-hukki, (Canarese), *Mysore.*]

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THOUGH certainly by no means furnishing a delicate dish for the table, our Great Indian Bustard, partly on account of its general wariness and the difficulty one has in most parts of the country in approaching it, and partly on account of its beautifully vermicellated and gamey plumage, has always been reckoned a prize worthy of a sportsman's pursuit.

How far south this Bustard extends, I cannot certainly say. It does not occur in Ceylon, nor have I any record of its occurrence (though this is quite possible) in Tinnevelly, Madura, or anywhere southwards of the Nílgiris. In Mysore, it is not rare, and northwards of Mysore it is found in suitable localities throughout the Bombay Presidency (including Káthiáwar and Cutch, in the former of which it is very abundant, and Sind where, save in the Thar and Párkar, it is very rare), except in the strip of country below the Ghâts on the Western Coast. It occurs equally in the Nizam's Territory, Berar, the Central Provinces, as far east as Sambalpur, the Central India Agency, Rajputana, including Ajmere, and the Punjab, including Baháwalpur. It nowhere, that I know of, crosses the Jumna northwards or eastwards into the North-Western Provinces, though it approaches this river closely everywhere. I have seen it near Karnál, Delhi, Gurgaon, Dholpur, in the north of Gwalior, and in the Bánda district, and I have heard of its occurring quite close to Allahabad across the Jumna.

In Oudh, it used, I am told, to be not uncommon, though it is now, I fear, almost, if not quite, extinct there. I do not know that it has ever occurred in the North-Western Provinces, north and east of the Jumna, or below Allahabad north of the Ganges, or in Behar, or any part of Bengal, Orissa, or Chota Nagpore, but it may occur in Sasseram and Gya, as I have been informed (though this requires confirmation) that it has been shot in Mirzapur and Rewah.

This species is peculiar to India; and, though at one time Mr. Gray identified *O. luzoniensis*, Vieill., founded on Sonnerat's "Paon sauvage de Luçon," with our Indian bird, there is no reason to suppose that *any* Bustard occurs in the Philippines, or that *O. luzoniensis*, Scopoli's *cristata*, is other than a South African species.

THE BUSTARD is, of course, a bird of comparatively level and open country, and throughout the provinces and states above enumerated, it is only in such tracts that it is to be looked for. In forest-clad or hilly regions, it is not met with.

It is to a great extent migratory, spending one season of the year in one part of the country, and moving to another to breed. Thus, for instance, in what used to be called Bhattiána, now the Sirsa district, it is extremely abundant during the rainy season, when it breeds: whereas, during the cold season, it is comparatively scarce.

Although occasionally they may be surprised in a field of standing giant or bulrush millet, and shot, as I have shot them right and left, with quail shot, it is generally in comparatively bare plains or in fields in which the cover is barely above their knees, that these Bustards are to be seen, and then it takes a careful stalk to get within a hundred yards of them.

In many parts of the country, the sportsman is quite content if he gets within 150 yards, and at that distance, with an express and rifle a front shot, there should be no difficulty in bringing them to book.

Jerdon gives a very good account of this species, chiefly compiled from various contributions to our Sporting Reviews. He says:—

"The Bustard frequents bare open plains, grassy plains interspersed with low bushes, and occasionally high grass rumnahs. In the rainy season, large numbers may be seen together stalking over the undulating plains of the Deccan or Central India. I have seen flocks of twenty-five or more, and a writer in the *Sporting Review* mentions having seen above thirty on one small hill.

"Towards the close of the rains, and in the cold weather before the long grass is cut down, the Bustard will often be found, at all events in the heat of the day, concealed in the grass, but not for the purpose of eating the seeds of the Roussa grass as the writer above alluded to imagines, rather for the large grasshoppers that abound there, and fly against you at every few steps you take.

"During the cold weather the Bustard frequently feeds, and rests during the day likewise, in wheat fields. When the grass and corn are all cut, and the bare plains no longer afford food to the Bustard, it will be found along the banks of rivers, where there is long grass mixed with bushes, or the edges of large tanks, or low

jungle, where there is moderately high grass, or it wanders to some district where there is more grass ; for though they do not migrate, yet Bustards change their ground much according to the season and the supply of grasshoppers and other insects. The hen birds, remarks the writer quoted above, generally congregate together during the rains, are very timid, and frequently, when a sportsman is pursuing a single one, she will attempt to seek safety, fatally for herself, in some large bush, particularly if the gunner turn aside his head and affect not to see her at the moment of hiding. The cock birds, at this season, feed a mile or so apart from the hens, and stretching their magnificent white necks, stride along most pompously.

"Besides grasshoppers, which may be said to be their favourite food, the Bustard will eat any other large insect, more especially *Mylabris*, or blistering beetle, so abundant during the rains; the large *Buprestis*, *Scarabæi*, caterpillars, &c., also lizards, centipedes, small snakes, &c. Mr. Elliot found a Quail's egg entire in the stomach of one, and they will often swallow pebbles or any glittering object that attracts them. I took several portions of a brass ornament, the size of a No. 16 bullet, out of the stomach of one Bustard. In default of insect food, it will eat fruit of various kinds, especially the fruit of the *Ber (Zizyphus jujuba)* and *Caronda (Carissa carandas)*, grain and other seeds and vegetable shoots.

"The Bustard is polygamous, and at the breeding season, which varies very greatly according to the district, from October to March, the male struts about on some eminence, puffing out the feathers of his neck and throat, expanding his tail, and ruffling his wings, uttering now and then a low, deep, moaning call heard a great way off.

"The Bustard has another call, heard not unfrequently, compared by some to a bark or a bellow; chiefly heard, however, when the bird is alarmed. This is compared by the natives to the word *hook*, hence the name of *hookna*, by which it is known to the villagers about Gwalior.

"When flushed, it generally takes a long flight, sometimes extending to three or four miles, with a steady, continued flapping of its wings, at no great height above the ground ; and I never found that it had any difficulty in rising, not even requiring to run one step, as I have many times had occasion to observe when flushing them in long grass or wheat fields. On the open bare plains, it will sometimes run a step or two before mounting into the air. A writer in the *Bengal Sporting Magazine* asserts that he has known the Bustard ridden down, and that after two or three flights it is so exhausted as to allow of its capture. I imagine that a healthy bird would tire out the best horse and rider before giving in."

The way in which the male expands the throat at times during the breeding season is most extraordinary. Twice I

have closely watched the whole process through binoculars. First the male begins to strut about, holding his head up as high as if he wanted to lift himself off his legs ; then, after a few turns, he puffs out the upper part of the throat just under the jaws, then draws it in again, then puffs it again, and so on two, three, or four times, and then, suddenly out goes the whole throat down to the breast, and that part of it next the latter swells more and more ; his tail, already cocked, begins to turn right back, over the back, and the lower throat bag gets bigger and bigger, and longer and longer, till it looks to be within six inches of the ground. All the feathers of the throat stand out, and, looked at in front, he seems to have a huge bag covered with feathers hanging down between his legs, which wabbles about as he struts here and there, with wings partly unclosed, and occasional sharp snappings of his bill. From time to time he utters a sort of deep moan, and stands quite still, and then off he struts again close up to the female, and then away from her. On both occasions that I witnessed these antics, the excitement seemed gradually to relax, and no connubialities resulted. Whether this is usually a prelude to such, or a mere nautch for the edification of the female, like the Peacock's grand display, I cannot tell, but I am inclined to believe the latter.

In parts of the Punjab, and doubtless elsewhere, the native fowlers are very expert in noosing them. A small party is descried in the middle of a plain. The fowler, with a blanket folded over head and shoulders, native fashion (or at times driving a trained bullock before him), and a large supply of pegs and gut nooses at his girdle, circles, slowly approaching nearer and nearer, round the flock. By little indications, inappreciable to us, he discovers the direction in which, if slightly and cautiously pressed, the Bustards will walk. Across this line of march, sauntering slowly backwards and forwards, and pretending to cut and collect grass the while, the fowler pegs down rows of nooses. Then, taking a wider circuit, he begins to approach the flock from the opposite side, not walking at them, but sideways, at right angles to the line he wishes them to take, passing nearer and nearer at each lap, never in the least alarming them, but quietly edging and pressing them towards the nooses. Sometimes he lets them walk right on to the nooses ; generally, when close to them, he drops his blanket, throws up his arms, and rushes at them. They always in these cases run a few paces before they rise, and though occasionally all escape, generally one, often two, and sometimes three or four, are caught by one or other leg. The chief skill consists in walking them exactly across the lines of nooses, which are never, according to my experience, more than fifty yards long, and usually much less.

If they are feeding anywhere near a small patch of cover, into which you can make your way without their seeing or

smelling you (and though other sportsmen tell me that they have not noticed this, I have found their scent just as keen as an antelope's), you can easily get them driven over you, the only difficulty being that they fly so low that, if you are in high thick crops, they may pass within twenty yards or less without your catching a glimpse of them, though you hear the heavy thuds of their wings so loudly that you fancy they are just upon you. At times, in parts of the country where these are in common use by the whole population, you may shoot them with S. G. shot off a camel, or again from a cart, as some people shoot antelope ; but the only real sport is stalking them, and the modern ·36 bore express rifle is just the thing for this.

They are very coarse feeders, and in the Punjab I have found large lizards, desert rats, and all kinds of reptiles in their stomachs, besides quantities of the young green shoots of the lemon grass, of which they seem very fond.

The flight is very heavy, though very powerful ; at a little distance they may be for a moment mistaken, when on the wing, for Vultures.

Several interesting notes on this species have been sent me, some of which I reproduce, as collectively they give a better general conception of the bird and its habits than could be gathered from any single account.

"The Great Indian Bustard," writes Mr. G. Sanderson, "occurs somewhat plentifully throughout Mysore, in suitable localities, *viz.*, open plains in the vicinity of scrub jungles. I have seen five feeding together, three commonly. I believe that the Bustard in Mysore migrates. It is exceedingly wary. Its note, usually uttered before daylight, is a booming cry, not unlike a distant shout ; hence it is denominated in Canarese the 'bird that calls like a man' *(Arl-Koogina-Hukki.)*

"The Bustard feeds in stubble fields and open plains till about 10 A.M., as also in the afternoon. During the heat of the day, it retires to low bush jungle. I have frequently shot Bustard by having markers posted upon commanding eminences within a circuit of three or four miles round their feeding grounds. The particular habits of the birds are generally well known locally, and when one has been marked down after its return from its morning feed, it may generally be walked up, within a few hundred yards of the place where it alighted. In the scrub jungle, they frequently lie very close, and must be carefully looked for. Before I was aware of this peculiarity, I failed to find several birds. On one occasion, a Bustard uttered its peculiar cry about twenty yards behind me. It had walked out of a small bush which I had passed within five yards, and uttered its note when standing on the ground."

"This species" (says Mr. G. Vidal) "is found very sparingly in the eastern districts of the Poona and Satara Zillas. It

is entirely absent in the Konkan, below the Sahyádri Range, and is scarcely ever seen within fifty miles to the east of the Gháts. The further east one travels, the more Bustard are seen, but they are very rare in both these zillas. During three years spent in the eastern sub-divisions of Satara (Khatáo, Tásgaon, Khánápur) and the Jath State, I only saw five Bustards. In Poona, in the Bhimthadi and Indápur sub-divisions, there are two or three localities in which Bustard are found year after year.

"The name *Maldok* is applied in Poona and Satara, and I believe throughout the Maratha country. In Satara, however, it is frequently *misapplied* by natives, who have never seen Bustard, to the white-necked Stork, *Dissura episcopa.*"

Mr. Davidson writes:—"Although, from all accounts, in greatly diminished numbers, the Great Indian Bustard is still found throughout the British Deccan; I have personally noticed it in the Nagar, Poona, Sholapur and Satara Collectorates. It is perhaps commoner in the south of the Poona district than in any of the others, but it is even here yearly becoming scarcer. In the western districts of Satara, it is already extremely rare, and I only saw three there altogether, all at one time, in the cold weather. In Poona and Sholapur, it is certainly a permanent resident, that is to say, that at all seasons a few may be found in parts of the Collectorate. I think, however, that more breed in the district than are to be found there in February or March, and that birds come in, in the beginning of the rains, to breed and leave when their young are able to fly. I have very seldom noticed Bustard in the black-soil villages, and have found them almost entirely confined to high unculturable land covered with short grass (and in the summer nearly baked into the consistency of a rock), or among the high grass preserves."

Mr. J. E. James says that this Bustard is a common and permanent resident of Khandesh and Násik, but is rarer in Guzerat.

"It is chiefly found on high lying sterile plateaux, where there is not too much cultivation. It lives chiefly on insects. Frequently an old cock is to be seen, and that from a very long distance, stalking majestically about alone. In the rains, he usually has a harem of five to six hens with him, and solitary hens are not often met with. Once I counted more than 30 in a flock.

"Its name, 'Hum,' used throughout the districts above referred to, is supposed to be derived from its booming cry. When winged, it will defend itself vigorously, uttering the loud and deep cry alluded to.

"The best way I know of shooting them is by stalking them behind a country cart, which should be driven past them. They take loose B.B. shot or wire cartridges of the same, but I

have seen them driven overhead with success. The largest bag I ever knew of was made near Málegaon, in the Násik district, when an officer came on a flock feeding in a field of Jowari, which was above their heads. He walked them up and shot eight of them as they rose, like so many Partridges."

From Sind, Mr. S. Doig writes :—

"The only district where I know personally of the occurrence of this bird is the Thar and Párkar, where it is tolerably plentiful. It is a permanent resident, and breeds in the "Thar" or desert portion.

"It wanders occasionally in the cold weather to the plains along the edge of the desert, sometimes going even as far as the Indus.

"Its *home*, however, with us is the desert, among the sand hills. When its food there gets scarce in the cold weather, especially in a year when no rain has fallen, it visits the '*Jamba*' (oil-seed) fields, on the plains, coming down to them to feed in the evenings, and returning to the sand hills in the morning. When disturbed, it utters a peculiar sharp trumpeting note, something between a hoot and a whistle.

"Besides stalking them (of which I need only say that, as the birds generally choose some open plain in the sand hills, or out in the flat, it is rarely possible to work within *gun*-shot of them), I have bagged them both by lying in wait for them and having them driven. Of each method I may give an instance.

"I happened one day to discover a '*Jamba*' field in the middle of an open plain, which was frequented by some Bustard. I noticed that they always came there about three in the afternoon. So one day I started off about two o'clock with a rug and a book, and concealed myself in the field on the side by which they usually approached.

"In the course of time, I observed the birds stalking down the side of the sand hills, some half mile away. They approached with extreme caution, trumpeting every now and then to one another. When they were within a couple of hundred yards, I stopped watching them, and laid myself flat on the ground, holding the gun ready cocked in front. Soon they got to the '*Jamba*,' and I conclude began to feed, as I heard no more noise, until suddenly I heard the sharp note of one close to me, evidently having discovered me, so I jumped up and fortunately secured a right and left. I cannot call this *sport*, but it was interesting to watch the actions of the bird, and as one does not always succeed, it is more or less exciting.

"One morning, while on the march, I spotted thirty-four Bustard in one '*Jamba*' field, near the foot of the sand hills. I looked round, fixed on the place in which to conceal myself, hurriedly explained to the camel driver what to do, and, as the camel passed my proposed hiding place, I dropped off (without stopping the camel), and threw myself flat among

the bushes. The driver went on and got round on the opposite side of the birds, and gradually drove them just like so many deer.

"Lying flat, I could hear their loud calls getting nearer and nearer, until at last, when I jumped up, I found myself in the middle of the flock, getting an easy right and left, and wounding a third badly, which I afterwards picked up.

"Sometimes, but rarely, a Bustard will hide itself, or rather *imagine* it has hid itself, behind a small bush in the plain, allowing the sportsman to go round and round it in a gradually narrowing circle until he is within easy range."

The Great Indian Bustard in Upper India lays mostly in July and August, but the breeding season varies a good deal according to the rainfall, and we have found eggs as early as the first-half of March and as late as the first-half of September. In Southern India, according to Jerdon, they lay during the cold season.

The eggs are placed on the ground, at the base of some bush or tuft of grass, in a small depression, generally unlined, often thinly lined with a few straggling blades of grass. The situation varies; sometimes the nest is in an open waste, sparsely dotted with a few herbaceous shrubs, often in the stubble of the giant and bulrush millets, and still more often in clumps and patches of high thatching grass, or the dense soft lemon grass, so characteristic of the favourite haunts alike of this Bustard and the Houbara.

My impression is, that the birds lay only one egg. But sometimes two eggs are found pretty close together, and either the females not unfrequently lay very close to each other, or when a female does lay more than one egg, she deposits the second some little distance away from the first. Khán Nizám-ud-din Khán has taken more than a hundred of these eggs with his own hand, and he never found two eggs side by side. Where, as not unfrequently happens, two are within a yard or two of each other, he believes that they belong to different birds, and that this is a fact he has in one or two cases proved by snaring both females. I have only myself seen five nests, each containing a single egg. I can, therefore, say nothing positive on this subject.

The eggs vary very much in size and shape. They are all more or less oval, but while some are moderately broad and slightly pointed at one end, others are long ovals, exactly similar at both ends, and others again are long and cylindrical, of the same size and shape as the egg of the great Northern Diver, figured by Mr. Hewitson; and I have one specimen that, both in colour, shape, and size, might have been the one from which his plate of the egg of the European Bustard was taken. The shells are very thick and strong, closely resembling those of the Sarus in texture, and,

like those of this latter species, the eggs very commonly exhibit pimples and rugosities at the large end, so much so that, out of sixty eggs now before me, only seven are perfectly free from such imperfections. Some of the eggs are dull and with little gloss, the whole surface being closely pitted with small pores similar to, but fewer than, those in the Peafowl's egg, while other specimens are brilliantly glossy. The ground colour varies much. Typically it is a sort of drab colour, but it is often earthy brown, pale olive brown, pale reddish brown, dingy olive green, and, although rarely, even pale leaden blue. The markings vary in extent, number, and intensity; sometimes they are pretty deep reddish brown and clearly-marked blotches, but more usually they are pale reddish brown clouds and streaks, sometimes so faint as to be mere mottlings, and sometimes, though rarely, altogether wanting. Occasionally, the markings form an irregular blotchy cap at the large end.

Out of sixty eggs in my collection, no two are precisely alike. In length they vary from 2·75 to 3·42, and in breadth from 2·05 to 2·45, but the average of sixty eggs is 3·11 by 2·24.

As to dimensions, I must go by my own measurements. Jerdon says that males run to 60 inches in length, and 28lbs in weight. They may do so, just as tigers perhaps do attain a length of over 12 feet, but I have never met with any such giants.

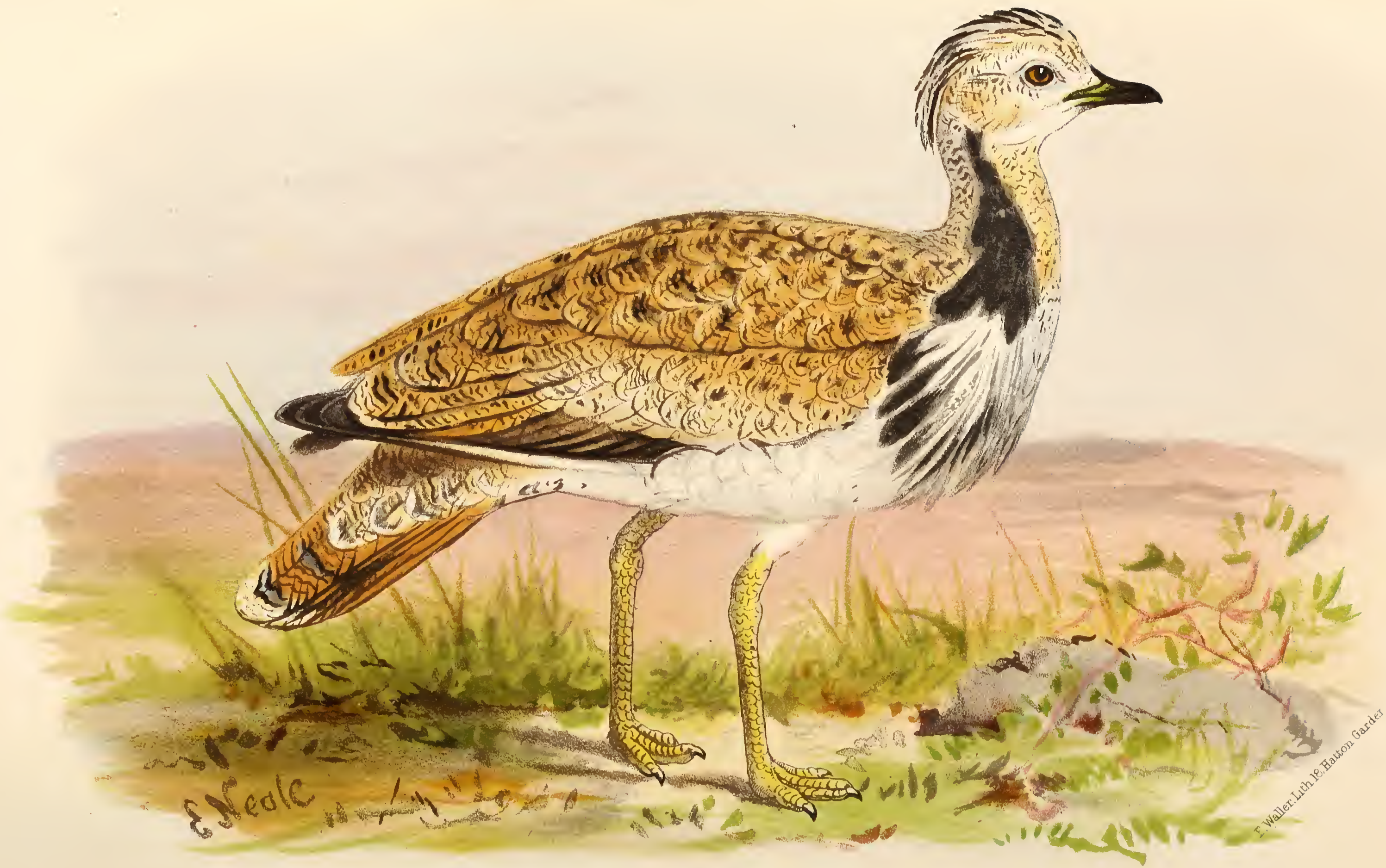
I have found adult *males* vary as follows:—

Length, 45 to 50 inches; expanse, 86 to 96; wings, 24·5 to 29; tarsi, 7·5 to 8·37; bill to gape, 4·0 to 4·75. Weight, 17 to 22lbs.

Females.—Length, 36 to 38 inches; expanse, 72 to 76; wings, 20·0 to 22; tarsi, 5·5 to 6·8. Weight, 8 to 10 lbs.

The legs and feet are generally yellowish creamy, a little dingy on the toes; but I have noted specimens in which the legs had more of a light fleshy tinge, and others in which the pale yellow had a grey or plumbeous tinge; the irides vary from pale to bright yellow; the bill is greyish brown to greyish white, dusky at tip and near forehead, and often a little yellowish below.

The Plate errs in showing the legs with enormous scales and of a much too pure and bright yellow, and in the bill, which is altogether wrongly coloured. It altogether fails to convey an adequate idea of the intricate minuteness of the vermicellations of the upper parts, and the slaty hue of the white-tipped wing feathers is ignored. Some birds have the upper surface a much deeper brown than the specimen figured, while others again are much greyer, especially on the rump, upper tail-coverts, and tail.



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OTIS MACQUEENII.

THE HOUBARA.

Houbara macqueeni, *J. E. Gray & Hardwicke.*

Vernacular Names.—[Tiloor, Houbara, Boombara, *Punjab ;* Taloor, (Sindi) *Sind.*]

HIS first day with the Houbara, if this happens to have been, as mine was, in a part of the country where they are plentiful, will always be remembered with pleasure by the sportsman ; but after the novelty of the thing has worn off, one is forced to admit that the sport they yield is but poor, and that, when killed, they form no such delicious contribution to the table as does their near ally, the Bengal Florican.

Throughout the plains portions of the Punjab, Rajputana north* of the Arvalis, Northern Guzerat, Cutch, the northern parts, at any rate, of Káthiáwár and Sind, the Houbara may be said to extend during the cold season, but throughout the eastern and southern portions of the tract thus defined they are mere occasional stragglers. I have known specimens killed in Delhi, Gurgaon and Rohtak, and again a single one in Bhurtpore, but I have only known of one being met with east of the Jumna, and that was one I myself shot in the Meerut district. It is in Bickaneer, Jodhpore, Sirsa, Jeysulmere, and such like semi-desert country further west that the Houbara really abounds, and here over a hundred may sometimes be seen in a single day.

In the stony plains of Affghanistan, as Hutton tells us, they are common all the year round, and in the highlands there, as in those of Beluchistan and Persia, they probably breed during the summer, migrating to the lowlands, and vast numbers of them beyond these into our Indian plains, during the cold season.

Throughout Persia it is common, and northwards, in the country between Yárkand and the Caspian, it occurs and breeds, but westwards its range is as yet undefined. It has occurred as a rare straggler in England and most of the northern and central countries of Europe. A Houbara, but whether our bird or the nearly allied African species (*H. undulata*) is still uncertain, occurs in Asia Minor, Armenia, Palestine and Arabia. Filippi,

* Although I have never seen specimens thence, I have received fairly reliable accounts of single specimens having been seen, south of the Arvalis, in the northern parts of Oodeypore and Neemuch.

who *says* he got the African form in *Armenia*, preserved no specimens, and Tristram, who found it common in the Jordan valley, fancied that the two birds were identical, and also procured no specimens. In some of the islands of the Persian Gulf, our species has been obtained ; indeed, a few pairs are supposed to have bred in an island near Fau a few years ago; probably both in Armenia and in the eastern portions of Arabia it is our bird that occurs.

I HAVE never known the Houbara to be shot earlier in India than the 27th of August, and the usual time for their appearance in the Sirsa district, for instance, is (earlier or later according to season) during the first fortnight in September.

They leave again towards the close of March, or early in April, according as the hot weather closes in earlier or later, and quite in the extreme north-west I have heard of a straggler being shot on the 28th April. It is clearly the heat that drives them away, and just before they leave, I have noticed that during the hottest part of the day they lie like stones and will barely run or fly.

Although pairs, and even single birds, are not unfrequently met with, the Houbara with us is eminently gregarious, and I have put up as many as twenty in a single flight.

Some sportsmen think that females greatly preponderate, and this may be so in particular parties, but I have never noticed it ; and I see that in the Sirsa district, between the 16th and the 22nd November 1867, I killed 83 birds, 47 of which were males, which, even allowing for the males getting the preference when a choice occurs, as being the finest and largest birds, does not look like any preponderance of females.

I have never heard this bird utter any sound, either when feeding undisturbed, or when suddenly flushed, or when wounded and seized, or about to be seized, by man or dog. Possibly during the breeding season the males have some call.

By preference, the Houbara affects the nearly level, though slightly undulating, sandy semi-desert plains, which constitute so important a feature in the physical geography of Western India. Plains, semi-desert indeed, but yet affording in places thin patches, in places a continuous sea, of low scrubby cover, in which the dwarf Zizyphus, (the Ber), the Lana (*Anabasis multiflora*), the Booee (*Ærua bovii*), various Salsolas, stunted Acacia bushes, and odorous tufts of lemon grass are conspicuous.

Here the Houbara trots about early and late, squatting under the shade of some bush, during the sunniest hours of the day, feeding very largely on the small fruit of the Ber, or the berries of the *Grewia*, or the young shoots of the lemon grass, and other herbs ; now picking up an ant or two, now a grasshopper

or beetle, and now a tiny land-shell or stone, but living chiefly as a vegetarian, and never with us, to judge from the hundreds I have examined, feeding on lizards, snakes, and the like, as the Great Bustard certainly does, and the African Houbara is said to do.

The Houbara greatly prefers running to flying, and when the weather is not too hot, will make its way through the labyrinth of little bushes which constitute its home at a really surprising pace. So long as the cover is low, its neck and body are held as low as possible, but as soon as it gets where it thinks it cannot be seen, it pulls up, and raising its head as high as possible, takes a good look at its pursuers. Not unfrequently it then concludes to squat, and though you may have been, unobserved, watching it carefully, whilst *it* was only watching others of the party coming from an opposite direction, it becomes absolutely invisible the moment it settles down at the foot of a bush or stone. Once it has thus settled, especially if it is hot and about noon, you may walk past it within ten yards without flushing it, if you walk carelessly and keep looking in another direction.

But it is weary work trudging on foot, under an Indian sun, after birds that run as these can and will, and in the districts where they are plentiful, people always either hawk them or shoot them from camels.

Off a camel, a large bag is easily made, and as, whilst after these Bustards, you get from time to time shots at Antelope or Ravine-deer, Quail, Partridges, and, on rare occasions, a Great Bustard also, it is not bad fun, though rather monotonous, like the scenery that surrounds one.

Taking the camel at a long, easy, six-miles-an-hour trot, across one of those vast wildernesses they affect, you will not be long before, raised high up as you are on camel-back, you catch sight of one or more Houbara feeding amongst the bushes. To them camels have no evil import; everybody uses them; none but the veriest pauper walks, every one rides, and rides camels. The peasant going out to plough his field rides on one camel and puts his plough on the other, which, with its nose-string fastened to the tail of the one he rides, trots along complacently behind. When, therefore, the Houbara see you coming along on a camel, they only move a little aside, so as to be out of your line of march, and you at once begin to describe a large spiral round them, so that, while appearing always to be passing away from them, you are really always closing in on them. Sometimes, if the time be early or late, or if the day be cold or cloudy, long before you are within shot, they start off running, and if you press them further, ultimately take wing, flying heavily, and soon re-alighting and running on, never, so far as I have seen, taking the long flights that the Great Bustard does, and never fluttering and skylarking in the air

as do the little ones. Generally, however, if the time be between 10 and 4, and the day bright and warm, as your spiral diminishes the birds disappear suddenly. They have squatted. Still you go on round and round, closing in in each lap, and straining your eyes, usually in vain, to discover their whereabouts; suddenly, perhaps from under the very feet of the camel, up flutters one of the birds, and after a few strides, rises, to fall dead a few yards further on, as they are easy to hit and easy to kill. Of course, I suppose a trained camel to be used, otherwise, what with flies, keeping up a perpetual twitching of every part of the beast's head, neck and body, and its natural suspicions that you and your gun are up to no good, you will find it by no means difficult to miss even a Houbara, especially if you do not remember always so to slew your camel round as to have the bird well on your left side.

At the first shot, all the Houbara that are at all close usually rise, but after shooting a brace right and left, and having them picked up and slung, I have known a third blunder up from within a few yards.

Often, especially when you are out alone, and after breaking up a large flock (which it is always best to do), are working a single bird, you close in and in until you reach the very bush by which you last saw it, and yet can find no trace of it. You pull up, as this generally starts the bird, but sometimes even then nothing is to be seen. The way they will squat at times on an absolutely bare patch of sand is astonishing; their plumage harmonizes perfectly with the soil, and you will have a bird rise suddenly, apparently out of the earth, within five yards of you, from a spot where there is not a blade of cover, and on which your eyes have perhaps been fixed for some seconds. This is especially the case about mid-day, when the sun is nearly vertical and no shadow is thrown by the squatting bird. Sometimes they try another plan; they get behind a single bush, and, as you circle round, they do the same, always keeping the bush between themselves and the sportsman; here, unless the sun is quite vertical, their shadow projected on the ground, apart from that of the bush, is sure, at certain positions in the circle, to betray them, and a shot through the bush brings them to bag.

In some parts of the country, the Houbara greatly affect fields of mustard and other crops yielding the oil-seeds of commerce, of which there is a vast variety, known by half a dozen different names, in almost every province.

When these fields are well grown, and are, say, a little higher than the bird itself stands, exceptionally good sport may at times be obtained.

They cannot run here, the growth is too dense, and a line of guns and beaters, sweeping a large field of this kind into which a flock has been marked, will often account for the whole

party, flushing them like so many Pheasants out of a dense turnip field, with buckwheat lines, along a cover side.

I have occasionally seen them in wheat, barley, and other grain fields, but only when these were young and tender.

Very large bags of Houbara are sometimes made. In the western parts of the Sirsa district, in years in which they are plentiful (for the numbers that visit us are variable, dependent on the rainfall further west), any man could shoot twenty in a day; and General Marston, while Superintendent of Police in the Kurrachee district, shot, I believe, forty-eight (and some people say *fifty*-eight) on one occasion.

Both in Sind and in the Punjab natives often hawk them, but they afford but little sport; and, so far as my personal experience goes, generally drop so sharp into cover that the Falcon as a rule stoops in vain.

Two or three times I have seen them nobly struck by wild Bonelli's Eagles, and wounded birds are often struck by other Eagles, notably the common *vindhiana*.

THIS SPECIES does not breed in India Proper, though it does in Affghanistan, and (though I believe sparingly), in the highlands of Beluchistan. I have never seen an egg, and have no authentic account of its nidification. It doubtless, as Kábulis have told me, lays in some small depression in the soil, two or three eggs, *very* similar to, probably (except for their somewhat smaller size) undistinguishable from those of the African bird, which are broad ovals, somewhat pointed towards each end, "olivaceous brown, tolerably regularly marked with somewhat blurred broad dashes of darker brown, and here and there spotted with clear blackish brown," measuring from 2·3 to 2·5 in length, by 1·75 to 1·9 in breadth.

JERDON SUGGESTED that the ruff and crest might in this species be peculiar to the male, and the former only seasonal; but, as I pointed out long ago (*Ibis*, 1868), both these are equally possessed by both sexes at all seasons, though both are more developed in the male than in the female. The youngest birds I have seen had a few short crest feathers and a small, but very apparent, ruff.

The sexes, except as regards length of ruff and crest, are nearly alike in plumage, though the female is a little lighter in colour; the chief difference consists in the size, the males being considerably larger.

The adult males measure as follows:—

Length, 28 to 30·25; expanse, 51·5 to 57·75; wing, 15 to 16·1; tail from vent, 8·5 to 10·25; tarsus, 3·4 to 3·9; bill from gape, 2·3 to 2·4. Weight, 4 to 5¼ lbs. Sir John Malcolm, in his Sketches of Persia, states that a Houbara killed before

him weighed 10 lbs; but this is some error, for I have weighed more than one hundred, and have in this number only met with three exceeding 5 lbs in weight, and none of these by more than 4 ozs.

Adult Females.—Length, 25 to 27·5; expanse, 47 to 51; wing, 14·25 to 15·25; tail from vent, 7·75 to 9·25; tarsus, 3·15 to 3·6; bill from gape, 2 to 2·5. Weight, 2lb. 10 ozs. to 3lb. 12 ozs.

The irides vary from pale to bright yellow, and it is the more necessary to note this because Bree figures them red, and Dresser as brown, and even our own artist has not made them the clear light yellow that they are.

The legs and feet are pale yellow, never clear and bright, mostly with a dingy, or greenish, or plumbeous tinge, at times creamy; the bill is blackish or dusky above, paler, usually greenish or yellowish, on gape and lower mandible.

THE PLATE would be really good if the chromo-lithographers had not reproduced the *running* of the black on the neck, which unfortunately occurred in Mr. Neale's painting, and if human art could do justice to the inconceivably delicate pencillings that adorn the entire upper surface. The specimen figured was a very brightly coloured one; the majority are greyer and less rufous, especially on the front of the neck and on the tail. The plate is wrongly lettered. I consider *Houbara* a recognizably distinct sub-genus.

F. Waller. Chromo-Lith. 18, Hatton Garden. London

SYPHEOTIDES BENGALENSIS. ¼

THE BENGAL FLORICAN.

Sypheotis bengalensis, *P. L. S. Müller.*

Vernacular Names.—[Charas, Charat, Charj, *N. W. Provinces, Oudh*, &c., Dabar, *Nepal Tarai; male* Ablac, *female* Bor, *in many parts of the Tarai;* Ooloo Moora, Ooloo Moira, *Assam.*]

THE Bengal Florican is almost confined to Eastern Bengal,* the valley of Assam, the Bhútán Duárs, and those portions of Bengal, Oudh, and the North-Western Provinces lying north of the Ganges. Jerdon says that it spreads through the valley of the Jumna into Rajputana, the Cis-Sutlej States, and parts of the Punjab; but this is wrong. It is the Houbara that is found in these localities, not the Bengal Florican; but sportsmen constantly call the Houbara the Florican, and hence the mistake. I have never seen the true Florican anywhere west of the Kádar of the Ganges, except as a rare straggler in the Dún; and there again it does not, to the best of my belief, extend further west than the Kádar of the Jumna. In Meerut I have killed both the Houbara and the Likh, but it is only when you get quite down into the Kádar of the Ganges at Hastinapur and Makhdúmpur, or again southwards below Garhmuktesar, that you meet the true Florican, and here we used to pick up a few couples every cold season.

This species has been recorded from Tipperah and Sylhet, but Captain Williamson tells me he has never seen it in the latter, and both he and Mr. Inglis say the same as regards Cachar.

This Florican is essentially Indian, and extends, so far as we *know*, nowhere beyond the limits of the empire. It is *possible*, however, that it may hereafter be found to occur in the country immediately east of Assam.

MR. HODGSON'S monograph of this species still continues the most exhaustive account we have of it, and from it I reproduce, with slight alterations, the following:—

" *Tarai* is an Indian term equivalent to Pays Bas, Landes, Marches, and Marshes, of European tongues; and the name *Tarai* is applied, *par excellence*, to a low-lying, moist and rarely redeemed tract of level waste, extending outside the Sál forest

* It is found, however, occasionally as far west as Nuddea at any rate.

along the base of the sub-Himalayas from the débouché of the Ganges to the Brahmaputra. This tract, of great extent and peculiar features, is the favourite habitat of the Florican, which avoids the mountains entirely, and almost, if not quite as entirely, the arid and cultivated plains of the Doab, and of the provinces west of the Jumna. It dwells, indeed, upon plains exclusively, but never upon nude or cultivated plains. Shelter of Nature's furnishing is indispensable to it, and it solely inhabits wide-spreading plains, sufficiently elevated to be free from inundation, and sufficiently moist to yield a pretty copious crop of grasses, but grasses not so thick nor so high as to impede the movements or vision of a well-sized bird that is ever afoot and always sharply on the look-out. Such extensive, well-clad, yet uncultivated plains are, however, to be found only on the left bank of the Ganges, and accordingly I believe that to that bank the Florican is nearly confined, and to the Tarai portion thereof.

"The moults are two annually—one vernal, from March till May, and the other autumnal, which is less complete and more speedily got over, between August and October. The young males, up to the beginning of March, entirely resemble the females, but the moult then commencing gradually assimilates them to the adults, which never lose, as the lesser species or Likh does, after the courting season, the striking black and white garb that in both species is proper to the male sex, and permanently so to the larger species from and after its first year of age. The young males of a year, however, have the hackles and crest less developed than those graceful ornaments afterwards become. There is, properly speaking, no nuptial dress in this species, though the hackles and crest in their most entire fulness of dimensions may be in part regarded as such."

Mr. Blyth, I should notice, asserts that this species, like the Likh, has a most distinct breeding plumage. He says*: "Mr. Hodgson is also certainly mistaken in his assertion that the nuptial dress is worn permanently, as we have witnessed the change before described, and the subsequent partial renewal of the breeding livery, which latter was not well developed in captivity, and have likewise observed the fact in the skins of wild specimens."

I am in no position to decide this question, and I can only say that I have certainly killed *some* birds in the black and white livery in both January and February, though I also distinctly remember bagging many more brown than pied ones, when shooting during the cold season. But these may have been young birds or females ; I never sexed birds in those days. Two young but full grown, or nearly full grown, males before me, shot in January, have the black bodies and white wings of the adult, but the

* Contr. Ornith., 1850, 45.

heads and necks are like those of the females. In one specimen, shot on the 24th of January, the black plumes are moulting in about the head and neck also. An adult, killed in March, is entirely in the black and white livery, though the plumes are less developed than in full breeding plumage. This is quite in accordance with Hodgson's observations ; and my own present impression is, that the majority of, if not all, adult males retain the black and white plumage permanently, although with the ruff and plumes much less conspicuous than at the nuptial season, and that the birds observed to moult into this livery by Blyth must have been young ones, *or* birds abnormally depressed by captivity.

Jerdon, however, thinks that, with the exception of some few birds—very old ones probably—the males *do* lose much of the black plumage during the cold season.

To return to Mr. Hodgson : "The Florican is a shy and wary bird, entirely avoiding fully-peopled and fully-cultivated districts, but not averse from the neighbourhood of a few scattered squatters whose patches of cultivation, particularly of the mustard plants (*Rai, Tori,* and *Sarson*) are acceptable to it as multiplying its chances of appropriate food.

"This exquisitely-flavoured bird is a rather promiscuous feeder ; small lizards, young snakes, insects of most sorts, but above all locusts, and after them, grasshoppers, beetles, the sprouts and seeds and succulent runners of various grasses, berries, stony fruits, aromatic lactiferous leaves, and stems of various small plants, with mustard tops and other dainties, all contributing to its nourishment. The largest portion of its usual food is vegetals ; but when insects abound, and especially locusts, they are almost exclusively eaten. Cerealia are eschewed ; but plenty of hard-seeded grasses and such like are taken, and a goodly portion of gravel to digest them.

"The Florican is seldom found in thick cover. When he is, he lies close, so that you may flush him at your foot ; but in his ordinary haunts, amid the scattered tufts of more open grass plats he can be neared with difficulty only, and No. 5 shot and a good heavy gun are required to bring him down at 40 to 60 yards distance. His flight is strong, with a frequent rapid even motion of the wings, and if he be at all alarmed, it is seldom suspended under 200 to 300 yards, whilst not unfrequently it is continued so as to carry the bird wholly out of sight and pursuit. When flying, the neck is extended before the body, and the legs tucked up under it, whereas the whole family of the Herons fly with neck retracted over the back, and legs stretched out behind—differences, the rationale of which can as little be conjectured as that of the gyrations of the dog ere he lays himself down to repose. The walk of the Florican, like that of the Heron, is firm and stately, easy and graceful : he can move afoot with much speed, and is habitu-

ally a great pedestrian, seldom using his powerful wings except to escape from danger, or to go to and from his feeding ground at morn and eve, or to change it when he has exhausted a beat.

"This species is silent and tranquil, and except in the breeding season, seldom utters a sound, but if startled, its note is a shrill metallic chik, chik-chik, and the more ordinary note is the same but softer and somewhat plaintive."

In the cold season, I have most commonly found it in the neighbourhood of large rivers, the Ganges and its affluents on the left bank. Open turfy spaces, sprinkled with tufts of rushes, such as occur every here and there in the midst of wide stretches of *Jhao* (*Tamarix indica*) jungle are favourite haunts, as are patches of recently burnt grass, where the new tender shoots are just sprouting. If not fired at, they will almost always return to the spot whence they were flushed, if not at once, at any rate before next morning, and when beating for Parah (Hog-deer) on the banks of the Ganges, I made it a rule never to fire at a Florican unless he rose within a reasonable distance, as, if not fired at, he was sure to be found next day within a short distance of the place at which he was flushed.

Florican are, I think, almost the fattest birds one shoots, and certainly amongst the best birds for the table with which India furnishes us. Whether it is on account of their excessive fatness and their somewhat smaller size, or what, I do not know, but the Florican is by no means such a difficult opponent to a good Falcon as is the Houbara. A good Shaheen will cut a Florican down with a slanting dash almost as soon as it is up, and before it has time to drop, which it always tries to do directly it catches sight of the Falcon. The prettiest hawking I ever saw was in 1852, in the Tarai between Pilibhít and Khairagarh, with some Falcons belonging, I think, to the Nawab of Rámpur. A Shaheen trained to keep up in the air at an elevation of about 30 yards, circled and hovered above us; the tract was turfy, with little patches of rush and flag, green but not swampy; the beaters walked in a close silent line a few yards in front of us; three Florican were successively flushed, at the very feet of the men, and cut down by this one Falcon, almost before the quarry knew it was pursued. Several other birds were intermediately flushed, and two or three black Partridges killed, but the Falcon never attempted to strike at anything that was not flushed quite close, so as to be within reach of her direct stoop.

From Assam I have received a number of most interesting notes in regard to this species, which are the more welcome in that heretofore scarcely anything has been recorded in connection with the Florican in that Province.

Colonel Graham writes :—"The Bengal Florican may be said to extend throughout the Assam Valley, from the Manás River, on the west, to the Mishmi Hills, east of Sadiya, on the east

"It is found in greatest numbers in high and dry open lands, the places most frequented by it being the large Bishnáth plain and the higher lands lying between the Government Trunk Road on the north of the Brahmaputra, and the hills throughout the Darrang districts.

"North of Mangaldai, in Darrang, about five miles from the Bhútán Hills, at a staging bungalow, well named Shikár, I shot fourteen Florican in one day.

"The Florican is also found on the Sadiya plains in fair numbers, and on the chars of the Brahmaputra, but is much scarcer on the south bank of that river.

"On the Bishnáth plain and other places in the Darrang district, I have seen, I am sure, from 30 to 40 Florican in a day.

"In October and November the bird is often found on the high strips of ground near to paddy fields, or even in the paddy, feeding on its blossom, while later on in January it is found in the mornings and evenings in the mustard crops then in flower; but during the day it retires to its favourite high lands.

"Burnt grass lands it also much affects, and while there, I have found its crop full of insects, and even little bits of burnt grass or seed.

"Taking Assam as a whole, I should say of the Florican ;—

"In Darrang, very common.

"In Kámrúp and Goálpára, a good sprinkling.

"In Nowgong, Sibságar, Lakhimpur, here and there a fair sprinkling, but as a rule scarce."

Captain C. R. Macgregor remarks:—"The Florican is called by the natives the Ooloo Moora, or Peacock of the ooloo grass.

"In June and July, and sometimes as late as August, I have repeatedly witnessed the performance of the 'nuptial dance' by the cock-bird in full plumage. The bird rises from the ground and hovers with extended wings from 10 to 20 feet in the air, and thus attracts the female birds who may be within an easy distance. Twice I have noticed this dance in the evening after the sun has gone down when returning from shooting under the Daphla Hills. The Florican generally breeds in the higher plateaux of the Assam Valley, near the foot of the hills. The males have been seen also by Major Cock in full plumage in the month of May.

"I have shot Florican beyond Sadiya under the Abar hills, on the chars of the Brahmaputra between Sadiya and Pulia, notably on the "Lalli Chapori," under the Nága hills in the vicinity of Jaipur, near Dibrugarh, on the Bishnáth plain, and along the whole country extending from Tezpur in the Darrang district up to north Lakhimpur.

"I have noticed that Florican generally seem to come to the same place year after year. They generally frequent the "*ooloo*" grass; but I have often found them in the "*ekra*" after

it has been burnt, and when fresh herbage has sprung up on the burnt portions.

"On two occasions I have shot birds in a wet rice field when I was out Snipe shooting—once in the beginning of October, near Dibrugarh, and another time in February, close under the Nága hills.

"I have put up no less than four Florican, all females, within a radius of 30 yards, but have never put up a cock and hen quite close to each other.

"The first time a bird is disturbed, it will rise almost immediately, but afterwards it becomes very wary, and generally runs a long distance. I have known birds to lie quite close, and allow a line of elephants to pass them, and then get up behind the line. As a rule, birds, when first flushed, always settle within sight.

"I have shot well grown young birds in December, and that without putting up others anywhere near them, so I fancy the young leave the mother before this. All the young that I have seen have been in female plumage."

Mr. Anley says:—"The real home of the Florican is in the Bhútán Duárs. They are there found in the standing crops of rice, and when these are cut, they retreat to the numerous patches of short fine ooloo grass, from which they derive their trivial name. In February and March they still keep to the ooloo grass, but near water, which becomes scarce about this time, and where the stunted cardamom, of which they are very fond, is found.

"They are very common in the Duárs, and a beat through a patch of ooloo grass, however small, is pretty safe to turn out at least one. I have seen as many as twenty together of a morning."

Writing from the Nága hills, Mr. Damant says:—"The Florican is not found in this district, but I have seen it in the low ground and chars which lie along the foot of the Gáro hills, where it is common, and where eight or ten may often be bagged in a morning, but it is rather shy there, and must be stalked on foot. I have also seen the Florican in the south of Dinagepore and in the Maldah district, but it is not very abundant in either of these places.

"I may add that the Florican is unknown in Manipur."

Col. Comber writes:—"The Florican occurs throughout Assam, but they are not so plentiful in the upper as in the central and lower districts, probably owing to there being more forests and less grass jungle in the former than in the latter.

"In many places they are very common, and ten or more are killed in a single day.

"The Florican breeds with us, and the young birds begin to fly about, by the end of August or early in September.

"In the early part of the cold season one sees little of the bird, but later on they are more easily met with. They then resort

to the Chapori land, and are found in mustard fields, where they find many insects, especially when the mustard is in flower. When this is cut, low grass jungle, known in Assam as the ooloo grass, is their favourite haunt, especially where the grass has been burnt and the young shoots are sprouting freely."

As to the nidification of this species, I again quote Mr. Hodgson:—

"The Florican is neither polygamous nor monogamous, nor migratory nor solitary. These birds dwell permanently and always breed in the districts they frequent, and they dwell also socially, but with a rigorous separation of the sexes, such as I fancy is paralleled in no other species. Four to eight are always found in the same vicinity, though seldom very close together, and the males are invariably and entirely apart from the females after they have grown up. Even in the season of love, the intercourse of the sexes among adults is quite transitory, and is conducted without any of that jealousy and pugnacity* which so eminently distinguish most birds at that period.

"In the season of love, the troops of males and females come into the same neighbourhood, but without mixing. A male that is amorously disposed steps forth, and by a variety of very singular proceedings, quite analogous to human singing and dancing, recommends himself to the neighbouring bevy of females. He rises perpendicularly in the air, humming in a deep peculiar tone and flapping his wings. He lets himself sink after he has risen some fifteen or twenty yards; and again he rises and again falls in the same manner, and with the same strange utterance, and thus perhaps five or six times, when one of the females steps forward, and with her he commences a courtship in the manner of a Turkey cock, by trailing his wings and raising and spreading his tail, humming all the time as before.

"When thus, with what I must call song and dance, the rites of Hymen have been duly performed, the male retires to his company and the female to hers; nor is there any appearance (I have at some cost had the birds watched most closely) of further or more enduring intimacy between the sexes than that just recorded, nor any evidence that the male ever lends his aid to the female in the tasks of incubation and of rearing the young.

"The procreative instinct having been satisfied, the female retires into deep grass cover, and there, at the root of a thick tuft of grass, with very little semblance of a nest, she deposits two eggs, never more or less, unless the first be destroyed. If

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* Blyth denies this peaceful disposition, and says that not only do the males fight in captivity, but that an experienced sportsman, who had shot many, assured him that he had come upon two males fighting desperately and so eagerly that, upon being disturbed, they renewed their conflict at a short distance, and thus allowed him to bag both. This has *often* happened to me where Black Buck were concerned, but I have never had the luck thus to catch Florican.

the eggs be handled in her absence, she is sure to discover it and to destroy them herself. The eggs are of the size and shape of an ordinary domestic fowl's, but one generally larger and more richly coloured than the other.

" The female sits on her eggs about a month, and the young can follow her very soon after they chip the egg. In a month they are able to fly ; and they remain with the mother for nearly a year, or till the procreative impulse again is felt by her, when she drives off the long-since fully grown young. Two females commonly breed near each other, whether for company or mutual aid and help ; and thus the coveys,—so to speak, though they are not literally such,—are usually found to consist of four to six birds. The Florican breeds but once a year in June-July, that is, the eggs are then laid, and the young hatched in July-August.

" The eggs, about the size of those of a Bantam, 2 inches long by 1½ inch broad, are of a sordid stramineous hue, very minutely dotted and more largely blotched and clouded with black, somewhat as in *Lobivanellus indicus* or the Indian Lapwing."

I have never yet succeeded in obtaining an egg of this species, but they have been described to me as closely resembling those of the Likh, or Lesser Florican (fully described under that species), but considerably larger and varying from 2 to 2·5 in length, and from 1·5 to 1·8 in breadth.

I HAVE shot but few of these Florican since I took to measuring birds, and have but few dimensions recorded. Three young but nearly full grown males measured—

Length, 24 to 26 ; expanse, 41 to 45 ; wing, 13·5 to 13·75 ; tail, 6·87 to 7·25 ; tarsus, 6·12 to 6·75 ; bill to gape, 2·25 to 2·5. Weight, 3·25 to 3·75 lbs.

A friend sends the measurements of a single bird, an adult male, which agree closely with those given by Jerdon :—

Male.—Length, 27 ; expanse, 46 ; wing, 14·75 ; tarsus, 6·25 ; tail, 7·5 ; bill at front, 1·3. Weight, 3 lbs. (!)

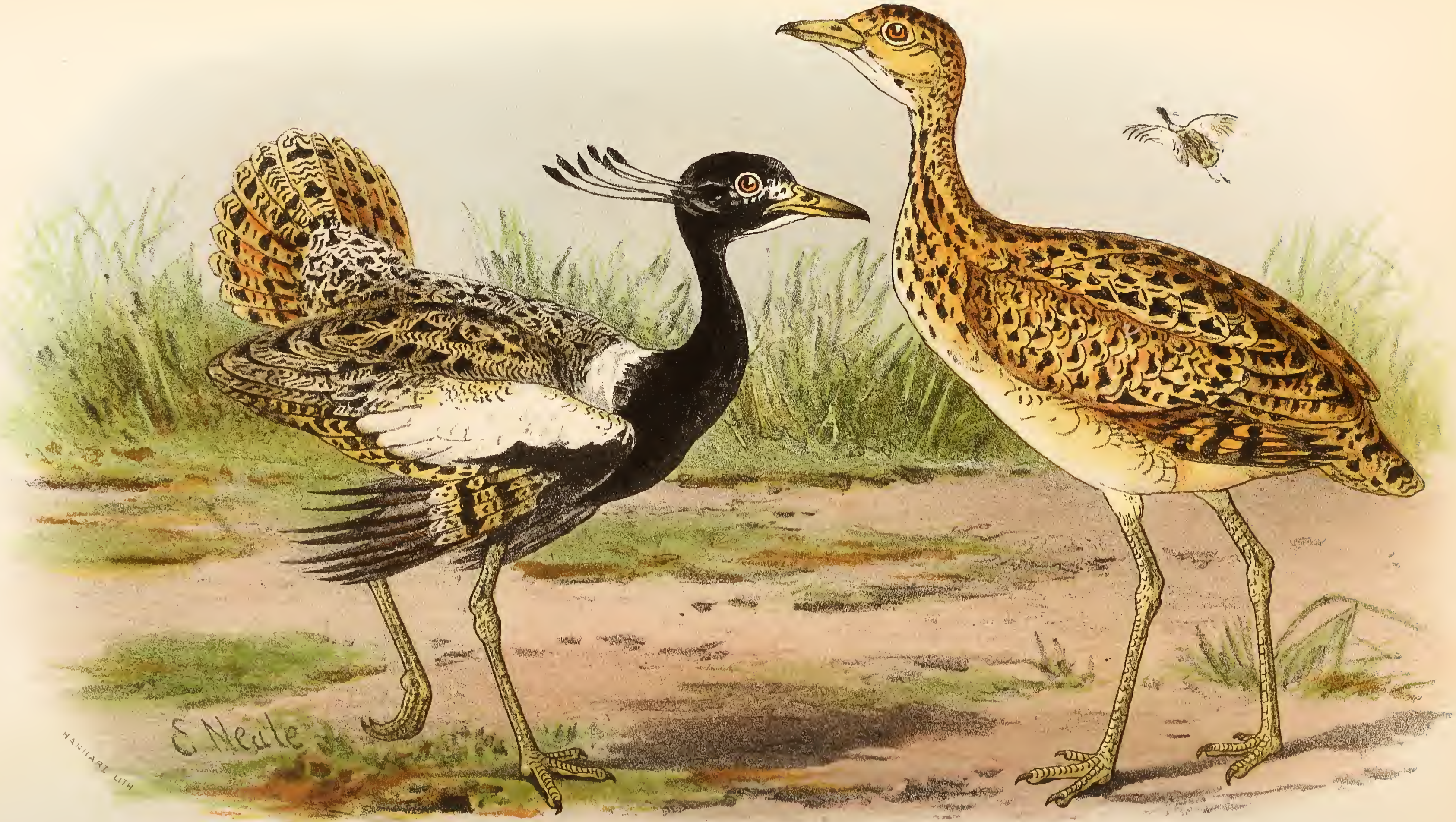
The *females* are said to be, and probably are, larger in this species, and Jerdon gives the dimensions as :—Length, 28 to 29 ; expanse, 50. Weight, 4 lbs to even 5 lbs. But four, apparently, adult females which I measured were much smaller, *viz.* :—

Length, 26 to 27 ; expanse, 43 to 48 ; wing, 14 to 14·75 ; tail, 7·25 to 7·75 ; tarsus, 6·37 to 6·75 ; bill to gape, 2·5 to 2·75. Weight, 3·5 to 4·25 lbs.

The irides have certainly been yellow, varying from very pale to almost golden in all the many birds that I have shot, but Jerdon says they are brown ; the legs are dirty straw-colour ; the bill dusky bluish above, bluish grey to yellowish below, and somewhat fleshy brown towards gape.

THE PLATE, taken from one of Mr. Hodgson's drawings, very accurately represents a male in breeding plumage, and a female or young male; but the bills are not rightly coloured, the breast plumes of the male are almost jet black and not grey,* and that female, absolutely faultless as regards plumage, would have looked more natural if she had not been depicted with both her legs on the off-side.

* Of course this grey shade is intended to represent the slightly greyish appearance which the feathers assume under a side light, but, unfortunately, this has been grossly exaggerated by the artist.



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SYPHEOTIDES AURITUS.

THE LESSER FLORICAN OR LIKH.

Sypheotides aurita, *Latham.*

Vernacular Names.—[Ker mor, *Guzerat;* Tun mor, *Deccan* and *Marathi Districts;* Chini mor, *Belgaum;* Khartitar, *Bheels;* Likh, Chota Charat, *N. W. Provinces*; Charas, Chulla Charas, *Southern India;* Kannoul, (Canarese); Niala nimili, (Telugu); Wurragu Koli, (Tamil); Bursati, or Kala Tugder, *Rohtak*, *Gurgaon.*]

I FIND great difficulty in defining the limits within which the Lesser Florican occurs; firstly, because it is irregularly migratory, and secondly, because individual birds straggle in the most unaccountable manner hundreds of miles beyond the furthest districts which it at all regularly visits.

Dr. Jerdon tells us that "this species is found throughout India, from near the foot of the Himalayas to the southernmost districts;" but this conveys, I think, a somewhat erroneous idea of its distribution, which is not nearly so wide as this might seem to imply.

Although a certain number are probably permanent residents of Khandesh, Násik and Ahmednagar, the real home of the Lesser Florican is in the drier portions of the Peninsula lying east of the Western Gháts, and south and east of the Gódávari.*

It is, of course, confined to plains and open country, and does not ascend any of the hills, though a single specimen was once killed, I hear, on the slopes of the Nílgiris between Neddiwattum and Pykarra, going down to the Wynád.

During the rains when it breeds, although many breed in the Deccan, as, for instance, about Sholapur, the majority, I think, move northwards and westwards, extending over the western parts of the Central Provinces, the Central India Agency, the southern and central portions of Rajputana, Khandesh, Guzerat, Cutch, Káthiáwár and Southern Sind†.

The migration is, however, irregular, as in some years it extends much further than in others. The birds are plentiful in one year, where in the next none or very few are to be met with.

* Even in the winter, however, stragglers will be found far outside the limits thus indicated, *e.g.*, below the gháts in S. Canara, (Jerdon) and in Ratnágiri and Dápoli, Southern Konkan (G. Vidal), in Sambalpur (one shot at Sohela, 11th January), in the Meerut district (two shot at Gházi-ud-din-Nagar, in December) &c., &c.

† A few couple are annually shot in August, on the Moach plain, near Kurrachee, and other similar localities within a circle of 20 or 30 miles of that station.

In years when the rainfall is plentiful, they are pretty common during the monsoon a little south of Delhi in Rohtak and Gurgaon. Generally, there are a good many about Jhánsi and so on, but, except as stragglers, they are not found in those parts of the country that I know further north than a line joining Sirsa and Delhi, nor do they cross the Jumna in any numbers.

Although I have known single specimens killed near Lucknow, Sultanpur, and other places in Oudh; though I have myself shot single birds occasionally in the Meerut and Etáwah districts; though Ball got a specimen in Sirguja, Hodgson others in the valley of Nepal*; though Jerdon says he has known of their occurrence in Purneah, and Parker tells me they have occurred in Nuddea; though one specimen has been killed on the Mekran coast near Gwader, and another at Sandoway in Arakan, I do not, as at present informed, consider that either Beluchistan, the Punjab, the North-Western Provinces, north and east of the Jumna, Oudh, Chota Nagpore or any part of Bengal, or the countries eastwards, can be properly included within its normal range.

It occurs nowhere out of India.

THE BLACK plumage assumed by the male in the breeding season (so different from its brown cold weather suit, which is like the female's,) and its migratory habits (sportsmen in one place never meeting with black males, and in others seeing none but these) led in past times to the belief that there were two distinct species. Jerdon, however, conclusively disposed of this error, and it is needless perhaps to allude further to it here.

Slightly undulating plains, covered by patches of grass and low scrub jungle, are the favourite haunts of the Likh, but during the cold season they are often found feeding in millet fields and others in which the crops are not too high or dense.

Owing to the unsportsmanlike manner in which these beautiful birds are massacred during the breeding season, they are everywhere diminishing perceptibly in numbers, and will, in another half century, be, I fear, almost extinct.

Mr. Davidson writes:— "The Lesser Florican is much commoner than the Bustard in the Deccan, but it also is diminishing very fast, and in Sholapur we could notice a diminution yearly."

And so write a dozen others, who still stick to the infamous poaching so universally practised. Get them in the cold season in short grass or springing crops, young wheat about a foot high for instance, and they are about the most difficult bird I know to get near. In fact, on several occasions I have found it

* At the same time I am bound to say that Mr. Hodgson, in a MS. note on this species, says: "Appears here (Valley of Nepal) about middle of May and disappears middle of June." I do not gather that he got many specimens, but whence could these birds come in May and June? Not from Southern India. It *may* be that there is a permanent colony of this species, of which I know nothing as yet, in Northern Behar, Gorakhpur, Basti, &c.

impossible to shoot them in any other way than by lying down behind some bush, and having them driven over me. There is some little sport in shooting them thus, but as for the common practice of butchering breeding birds, it is a disgrace to our country, which all true sportsmen should band together to suppress. Captain Butler writes:—"For my part, I have always protested against the wholesale destruction of these fine birds in the breeding season, and tried very hard, when I was in Deesa, to persuade sportsmen (!) to spare the hens. But it was of no use; they argued that, 'if they didn't shoot them, some one else would,' and consequently the Florican were shown no mercy.

"The usual method of shooting them is to walk them up in line, when they rise usually within easy shot. They are easily killed, and I have seen longer shots made at Florican than any other bird I know. In fact they drop if you fire at them at almost any possible distance (provided, of course, you hold the gun straight). At times, however, after being marked down, they are very difficult to find, as they commence running the moment they alight, and often get 200 or 300 yards away before you reach the spot where you have marked them down. But for this, scarcely a bird would escape.

"In the breeding season the cock birds, for some conjugal reason, indulge in an amusement called 'jumping,' and it is in this way that their whereabouts are usually discovered.

"*Shikáris* go out and watch the grass preserves in the early mornings from some elevated spot, and can tell almost to a single bird how many Florican there are on the ground.

"The operation of 'jumping' is as follows: About every quarter of an hour, sometimes oftener, the cock birds suddenly rise up out of the grass to a height of six or seven feet, utter a peculiar croak, and descend into the grass again with outspread wings, making a drumming sound as they descend. Unless disturbed, they always remain about the same spot, so that, by sending a '*shikári*' to mark them down in the early morning when they are 'jumping,' you know exactly where to find them in the day time.

"About Deesa eight to nine brace in a day was, I think, the largest bag that was made during the three years I was there, but in Káthiáwár, about Rájkot, bags of as many as eighteen and twenty brace are occasionally still made in a day."

Mr. James says:—"The ordinary way in which a single gun pursues Florican is to walk through the grass, with a few beaters, listening for the cry of the bird and following it; in this way the bird can be tracked for a considerable distance. Before very long the bird will be seen jumping up above the long grass, as some think to pick grasshoppers off the stems. The best way then is to run as hard as possible up to the place when the bird will rise. They drop very easily to shot, but when once flushed are difficult to flush again.

"The largest bag I ever knew of was one of ten couple shot by four guns in the Eklagan Kuran, near Dharangaon, in Khandesh.

"*Pardís*, the professional poachers* of the Deccan, snare them along with Partridges and Quail, simply by setting a rope of snares down the grassy bank of a dry nalla and then beating the bushes.

"It is perfectly true that sometimes the effects caused by eating Florican's flesh after they have been feeding on blisterflies are most painful and disagreeable. I myself have suffered from this cause."

As a bird for the table (setting aside exceptional cases like this), they vary very much; they are *never* to be compared, I think, to a fine Bengal Florican, and I have often found them dry and hard, much like a Blue Pigeon.

Mr. Davidson says:—"Florican are found sparingly in Mysore, but I only saw one on two occasions in the Túmkúr district, during last year. It is a migrant during the rains to Western Guzerat, *where it is remorselessly shot down while breeding*, but apparently avoids the Panch Mahâls almost entirely; at least only one specimen has been secured there during the last few years.

"They are ordinarily shot in the Deccan in the long grass bhirs, being flushed by a line of beaters, the guns walking along with the beaters. In the breeding season the cocks are sometimes shot in the following way:—In the early morning the gunner, *for one can hardly call him a sportsman*, goes to a bhir, where he knows there are birds, and waits tell he sees one jump up in the grass and cry. He then stalks within 50 or 60 yards, and again waits till the bird jumps and then runs as fast as he can towards the spot. The bird generally rises 30 or 40 yards off, and there is a fair amount of excitement, if not of sport, in shooting them this way."

Dr. Jerdon says:—"I have found the cock bird commencing to assume the black plumage at the end of April, and have killed them with the black ear-tuft just beginning to sprout, hardly any other black feathers having appeared. In other instances, I have noticed that these ear-tufts did not make their appearance till the bird was quite mottled with black. The full and perfect breeding plumage is generally completed during July and August. At this season the male bird generally takes up a position on some rising ground (from which it wanders but little for many days even), and during the morning specially, but in cloudy weather at all times of the day, every now and then rises a few feet perpendicularly into the air, uttering at the same time a peculiar croaking call, more like that of a frog or cricket than that of a bird, and then drops down again. This is probably

* Not half such bad poachers, I submit, as the English gentlemen who slaughter game birds, male and female, in the middle of the breeding season.

intended to attract the females, who, before their eggs are laid, wander greatly, or perhaps to summon a rival cock; for I have seen two in such desperate fight as to allow me to approach within thirty yards before they ceased their battle."

I note that at all times, when alarmed, they seem to utter this croak, which somewhat reminds one of that of the corn crake, but not in so deep a tone as when nautching. Some sportsmen have fancied that the upward spring of male birds (and though I have seen females jump, the spring has not the same character as when the males do it) is made in pursuit of flies, but (as was remarked by Mr. Davidson, C.S.) I have no doubt that it is part of the regular nuptial performance.

He says:—"The Florican breeds all round Sholapur, in considerable numbers, wherever there are grass preserves with long grass. During the breeding season they seem chiefly to haunt the thinnest patches of long grass, rather than those full of small bushes; they are at this period exceedingly difficult to flush, particularly the hens, which, even if you succeed in forcing them to rise, get up only at your very feet and make but very short flights. The cocks are not quite so difficult to flush, but you are obliged to run towards them, to get even *them* up: if you simply walk after them, they will rarely rise. Their whereabouts are, however, generally easily discovered by their frog-like call, and their occasional sudden jumps up into the air. They do not seem to call much when the sun is bright, but chiefly in the morning and during cloudy days. I have often watched them flying or jumping up, but I am still uncertain why they do it. My original impression was, that they sprung up to seize insects from the grass stalks, but I have long abandoned this idea, as they rise much above the grass. Moreover, I have only seen one bird thus rise that could have been a female, and this was dark-coloured, and probably a male that had not assumed breeding plumage, and I am inclined to consider these sudden flights as simply one of those bridal displays so common in the males, especially of gallinaceous birds, such as the flapping of the wings in Pheasants, the nautch of the Peacock, the lêk of the Capercailzie, and the pouch-inflated strut of the big Bustard, and if it can be certainly established that this habit is confined to the males,* no alternative solution seems open to us."

The Lesser Florican, according to my experience, feeds largely on vegetable substances, berries, green shoots of grain, grasses, and all kinds of herbs, but it also eats insects in abundance, especially grasshoppers and the glittering cantharides, and, Jerdon says,† beetles, centipedes and even small lizards.

* And let me add, the males in the breeding season, which I believe to be the fact.

† Hodgson notes: "Stomachs full of grylli, thin coated small beetles, fireflies. and gorgeous gadflies. Comes" (into the Nepal Valley) "when the wheat ripens in April and May; leaves in the heavy rain in July, when the valley is flooded It resides in the ripe corn and green, *dry* or hill" (*i. e.*, non-irrigated) "rice. It eats chiefly grylli and a few aromatic weed tops and sesamum buds."

It more habitually erects its tail than any other species of Bustard that I know, and Jerdon is quite correct in saying that, as a rule, "walking or running it raises its tail, the lateral feathers diverging downwards, while those of the centre are the most elevated, as is seen in domestic fowls, &c."

Its flight much resembles that of the larger Bengal species, but it is, I think, rather more rapid and not so strong.

I have never myself seen it hawked, but should fancy it would fall an easy prey to a good Shaheen or Peregrine. Jerdon says he has hawked it both with *F. jugger* and the Shaheen, and that on one occasion he had slipped a Falcon at one, when the Falcon, though in hot pursuit, being a little behind, a pair of the Common Eagle (*A. vindhiana*) came down from a vast height and joined in the pursuit. One of them made a headlong sweep at it, which the Florican skilfully avoided, but only to fall a victim to the other which stooped almost immediately after its confederate, and dashed the quarry lifeless to the ground with its back laid open for its whole length. One of the very few specimens I obtained in the Etáwah district was killed in a similar manner by a Bonelli's Eagle (which I shot) within 30 yards of me, and before I had had time to fire at the Florican, which rose quite unexpectedly out of a small patch of grass into which I had fired after a scuttling hare.

THE MAJORITY of the birds lay in September and October, and in the regions into which I have already stated that they migrate during the rains, but some still remain to breed in all parts of Southern India, and a considerable number in the Deccan, and Jerdon says: "I have put the hen bird off her nest in August in the Deccan, and in October near Trichinopoly, and have heard of the hen having been found incubating still later, up to January indeed.

As to the nests, they are mere depressions, often mere spaces, between tufts of grass.

Mr. Wenden, writing to me of two nests that he took, says: "One nest was placed between the roots of several tufts of tussock grass growing in black soil, and in the intermediate space, the soil not being held up and protected by roots had been washed out or had sunk from the effects of rain, and thus a natural basin had been formed. In this the bird had excavated a saucer-shaped hole, perhaps four inches deep and nine inches in diameter, the bottom of which was bare. Round the edges was a slight fringe of grass, which had not so much the appearance of having been placed there by the bird for any purpose, as it had of being simply scraped away from the actual sitting place. The nest contained three eggs.

"The other nest, taken on the 19th September, was the only one which I had an opportunity of watching. The eggs were deposited on the bare ground, which was perfectly level (without

the least signs even of scratching), in some thin scanty grass, about two feet high, and about two yards in from the edge of the grass patch. Not a hundred yards from the plot of grass in which the eggs were deposited was a preserve, over half a mile long by a quarter broad, of very high dense grass, a far more likely place, one would have thought, for so wary a bird to lay its eggs.

"On the 16th, I went out and watched this bird for more than an hour, just about the time at which she had been flushed on the morning before from the single egg. From the tree on which I sat, with my binoculars, I saw her running rapidly out of the dense preserve, across the open and into the scanty patch in which was her egg. Here she moved about for some minutes feeding, and every now and then she sprung into the air with a low clucking cry, which was answered by the male bird from the preserve, though at first I could not see him. Then, as though a sudden thought had struck her, she darted to the nest, and after one or two springs, and walking round and round the egg, she squatted and deposited another. While she sat, she was quite silent, but the male bird, who had now advanced closer to me, kept springing in the air and crying continually. The operation of laying the egg seemed to last about twenty minutes,—*i. e.*, from the time she sat to the time she rose—and having made another spring or two and walked round the eggs she then made straight tracks for the dense grass where the male bird was calling.

"I went out quite alone on this watching expedition, and all was quite quiet, and the birds were at their ease ; but while I was still in the tree, a man came into the preserve with some cattle, and then I saw both birds spring several times *silently*, and after that I saw or heard nothing of them."

On the 18th another egg was laid, but on the 19th, finding still only three, Wenden shot both parents and took the eggs. Three or four is the usual complement, but Lieut. F. Alexander says that they sometimes lay five, and Mr. James writes that he "once shot a hen Florican and picked up from where she rose *five* young ones just able to run, two of which were carried home, one soon died, but the other was successfully brought up on grasshoppers till it was fully fledged. It was very tame, and ran about the poultry yard fearlessly. Unfortunately it was accidentally killed just after attaining maturity."

The eggs, like those of the Great Bustard (which, though smaller, they greatly resemble), vary much in size, shape, and colouration.

Typically they are very broad ovals, with a feeble tendency to a point at one end ; but some are nearly spherical, some are purely oval, while one or two approach a Plover shape.

The shell, everywhere closely pitted with minute pores, is stout, but smooth, and has always a slight, and at times a brilliant, gloss.

The ground colour varies from a clear, almost sap green, through various shades of olive green, drab and stone colours, to a darkish olive brown. I have seen no specimens exhibiting the blue and bluish grounds occasionally met with in the eggs of the Great Indian Bustard.

The markings are brown, reddish or olive brown, occasionally with a purplish tinge, in some very faint and feeble, obsolete, or nearly so, a mere mottling ; in others conspicuous and strongly marked ; but in the majority neither very faint nor very conspicuous. In character they are generally cloudy streaks, more or less confluent at the broader end (from which they run down parallel to the major axis), and more or less obsolete towards the smaller end. Occasionally, however, they are pretty uniformly scattered over the whole surface of the egg.

In size, the eggs vary from 1·77 to 2·06 in length, and from 1·5 to 1·7 in breadth ; but the average of twenty-three eggs is 1·88 nearly, by rather more than 1·59.

THIS SPECIES varies much in size, probably a good deal according to age, the females being all markedly larger than the males. Some dimensions are:—

Male.—Length, 17·25 to 19 ; expanse, 27·5 to 32 ; wing (to end of longest primary), 7·3 to 7·9 ; tail, 4·1 to 4·5 ; tarsus, 3·65 to 3·9 ; bill from gape, 2 to 2·1. Weight, 14 ozs. to 1 lb. 4 ozs.

Female.—Length, 18 to 21·3 ; expanse, 29 to 36 ; wing, 9·0 to 9·75 ; tail, 4·7 to 5 ; tarsus, 3·9 to 4·4 ; bill from gape, 2·28 to 2·3. Weight, 1 lb. 2 ozs. to 1 lb. 10 ozs.

The irides are dull yellow, sometimes very pale, sometimes brownish ; the legs pale, somewhat fleshy yellow, sometimes hoary, sometimes more dusky ; the bill is pale yellow, somewhat fleshy towards gape ; the ridge, tip, and more or less of the upper surface shaded with dusky horny brown.

A young nestling is thus described by Mr. J. Davidson :—"Three young Florican, one only half out of the egg, were brought to me yesterday (25th October). An almost uniform dirty pale yellow colour, with an unclosed V (*i. e.*, \/) on the crown of the head in *dingy* black, and blotches, rather stripy, of black on wings, back, and sides, and about the ears ; legs and beak, a colour between pale blue and pale pink ; and on the tip of the beak a little lump of pale pearly white."

In both sexes, but it is more marked in the male, the earlier primaries are very sharply pointed, and have the terminal one-third greatly narrowed by a sudden emargination.

THE PLATE, but for chromo-lithography, which brings out the markings of the female too coarse and blotchy, would be all that could be desired. The male in breeding plumage

is very good. In winter the plumage of the male resembles that of the female.

Note, that in the fullest breeding plumage, the males generally have the ear tufts longer, and have the whole upper surface, and especially the tail, darker and less rufescent than in the specimen figured.

Also, that in the females the upper surface is often much darker, the buffy margins of the feathers being reduced to mere lines.

THAT THE Bustards are originally an African family is patent, since at least 20 (and possibly 22) species, other than those with which we have dealt, are already known from that Continent.

Still, as will have been seen, both *tarda* and *tetrax* might be classed rather as Palæarctic than African; three species are peculiar to India, of which one extends to the very easternmost limits of Assam, and, strange to say, one species, very closely allied to our Great Indian Bustard, occurred, some fifty years ago, almost throughout Australia, though now extinct, or nearly so, in the more densely inhabited portions of the country.

WE HAVE now to deal with the Sand-Grouse, and in the first instance, with the feathered-footed section of these, which constitutes the genus *Syrrhaptes*. Only two species of this genus are known—the Thibetan bird, which we shall discuss immediately, and *S. paradoxus*. This latter species "ranges from the plains of Pekin and Tientsin, through Mongolia and the Great Gobi Desert into the Kirgiz Steppes, occasionally wandering into parts of Western Europe in more or less considerable numbers. The year 1863 was notable for a great western migration of this species, flocks of considerable size having been observed even in Ireland."*

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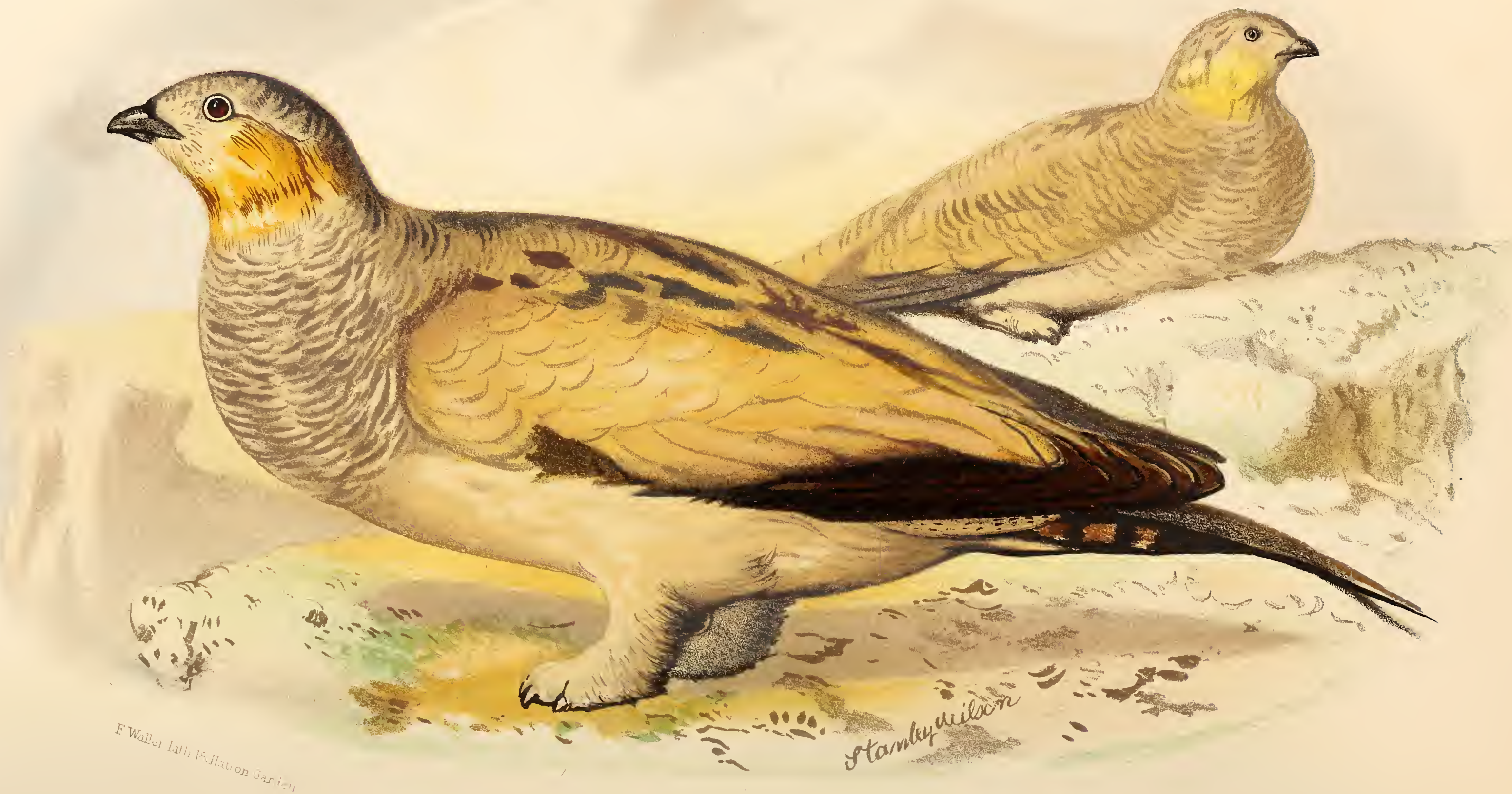
* D. G. Elliot.



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SYRRHAPTES THIBETANUS.

THE THIBETAN SAND-GROUSE.

Syrrhaptes tibetanus, *Gould.*

Vernacular Names.—[Kuk, *Ladak.*]

IT is in the semi-desert Alpine tracts of Ladak and the upper portions of the Sutlej valley alone that this splendid species (so far as is yet known) occurs within our limits. I have seen numbers on the Roopshoo plains, about the head of the Pangong Lake, about the Tso-Mourari, and the Tso-Khar, and in the country further east towards Hanle.

Biddulph says:—"We first saw this at Chagra (the first halt above the Pangong) in September, at an elevation of nearly 15,000 feet, where it was common and tame. We found it flying about in flocks of from three to ten on the hill side above the camp. In getting into the Chang Chenmo Valley again, two days later, we saw it at an elevation of about 15,000 feet.

"On the return journey, this time in June, I found them very tame and plentiful nearly at the top of the Karakorum Pass, say at an elevation of fully 18,000 feet."

All these localities are inside the Ladak boundaries, of which Shahidulla is considered the frontier post.

Wilson writes to me:—"On the water-shed range crossing from our Mussooree Hills into Thibet, you come across them at once, and they are common enough from thence eastwards up the Sutlej Valley."

I do not think that it elsewhere comes within our limits. It does not occur in Sikhim, nor, so far as I have been able to learn, in Nepal or Kumaun, but it certainly occurs in Thibet just north of both these provinces, and Blanford says that the Governor of Kambajong presented him with four live birds obtained just north of the Sikhim frontier in Eastern Thibet.

Outside our limits, it probably extends eastwards throughout the lofty plateaux north of the Himalayas to the borders of the Chinese Province of Kansu, as Prjevalski obtained it at the Kokonor; probably it extends equally westwards in suitable high regions. Just outside the Ladak frontier, and the range through which the Karakorum leads, Cayley shot some near Kizil-jilga on the upper Kara Kash. Others were seen some 20 miles south of Malik Shah, and Biddulph saw

a flock of about 20 on the Pamir on the 2nd of May, at an elevation of 13,500 feet and shot four.

Yárkand Proper is too low for this species, but Biddulph thought he twice saw flocks flying overhead, once between Kooshtak and Oitograk, and on the other occasion between Kizzil and Kokrobat in the desert.

I DO not think that I have ever met with this species at elevations above 17,000 or below 12,000 feet, but I have, of course, only seen it between 1st June and 15th September and during the colder months it may descend lower.

Although it keeps on barren and desolate steppes, in the neighbourhood often of rocky ranges, *I* have never seen it (the experience of others seems to be different) on these or on steep hill sides, and I have always noticed that there was sure to be some water, fresh or brackish, within a reasonable distance of its feeding ground.

In the morning and afternoon it moves about on the more or less undulating semi-desert plains, feeding on grass and other seeds and berries, and any young green shoots it can find. During the middle of the day it squats about, especially if the day be hot, basking in the sun, very generally scratching for itself a small depression in the soil.

Both when feeding and taking its siesta, it is not uncommonly in considerable flocks (I have seen several hundreds together); but in summer, at any rate, it is perhaps more common to meet with it in little parties of from three to twenty. Whilst feeding, it trots about more rapidly and easily* than its short feather-encased legs and feet would lead one to suppose; individuals continually flying up and alighting a few yards further on, and now and again the whole flock rising and flying round, apparently without reason or aim.

Sometimes it is very shy, especially in the early mornings and evenings; and though it will not, unless repeatedly fired at, fly far, it will yet not let you approach within 100 yards; but, as a rule, during the heat of the day, you may walk right in amongst them. They are precisely the colour of the sand when basking, and often the first notice you have of their proximity is the sudden patter of their many wings as they rise and dart away, and the babel of their cries, which, if the flock be a large one, is really startling for a moment. Once up, they are off and away with a rapidity that takes a good shot, and a hard-hitting gun to deal with satisfactorily, but they rarely at mid-day go far; and if the sun is bright, you may get shot after shot out of the same party by following them up.

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* Prjevalski, I see, says it runs clumsily and slowly, generally forming a line. I have watched it dozens of times, and never saw it form any special line. Indeed, a flock is usually irregularly dotted about on a plot one or two acres in extent, and as to clumsiness, if the ground be *smooth* (rough ground, of course, bothers its short legs) it moves quite easily.

Early in the morning, and quite at dusk, they come down to the water to drink; by preference to fresh water, but, as at the Tso-Khar, at times to quite brackish water.

They are always noisy birds when moving about, uttering a call something like guk, guk, to my ear, or again, as some people syllable it, "yak-yak," "caga-caga," &c., &c., but they are specially noisy in the evenings, when they come down to drink; and quite late in the evening, when wearied with the day's tramp in those high regions, dinner discussed, and the peaceful pipe achieved, one turns in for the night, their characteristic double cry may still be heard round the tents, pitched always, of course, when possible, near water.

It is many years since Mountaineer personally dealt with this species, and all he can now remember of their habits is, that they "are met with in pairs, sometimes singly, and also in flocks of half a dozen or a dozen, on the hills and upland plains, at from 14,000 to 17,000 feet. They lie close till one gets within 50 or 100 yards, and then fly up with the usual chuckle, generally alighting again at no very great distance."

Nothing more seems known of the bird.

THAT THEY breed on the high plains of Ladak I am quite certain, but I have never seen the eggs, nor has my friend, Mr. Wilson, been able of late years to procure any for me.

IN THE old days when I used to shoot them, I cared little for birds and never measured them; so that the few measurements I have to record I owe to others.

Males.—Length, 18 to 20; expanse, 29 to 31; wing, 9·9 to 10·5; tail (according to development of central feathers), 7·5 to 9·5; tarsus (which, even in the fresh bird, it is very hard to measure), 1·1 to 1·3; bill from forehead to tip, 0·74 to 0·78.

Females.—Length, 16·5 to 18; expanse, 27 to 28; wing, 9·7 to 9·9; tail, 7·0 to 8·4; tarsus, 1·1; bill, as before, 0·72 to 0·73.

The dimensions of the females are taken from only two specimens, which were so sexed by the collector, but it has occurred to me that they *may* be only young males, which, however, doubtless agree in plumage with the female.

THE PLATE (*male in foreground—female in rear*) is a poor thing; conveying, if held at some distance, a general conception of the species, but ill-coloured, the legs and lower surface of the male being really much whiter; and, in the case of the female, a sketchy scratch, altogether ignoring all the more delicate markings and pencillings of the plumage, so much so that I think it necessary to append a detailed description.

DESCRIPTION.—Bill and nails bluish horny; soles whitish.

Plumage, Male.—Lores and forehead whitish, faintly tinged with buff, and dark shafted; crown, occiput, and nape white,

closely and somewhat irregularly barred with blackish brown; chin, throat, cheeks, ear-coverts, sides and front of neck, and a narrow band across the back of the neck (not shown in Gould's figure, and wanting in some specimens, but very conspicuous in most adult males) bright buffy yellow in the breeding season; white tinged with the same colour in the winter; lower part of the back of the neck, upper back and upper breast white, slightly tinged vinaceous with close regular narrow transverse blackish brown bars; the whole mantle, including the scapulars and tertiaries, vinaceous fawn colour, brightening to rufous buff along its (the mantle's) exterior margin, with large conspicuous black blotches on the inner webs of the scapulars, and everywhere excessively finely vermiculated with blackish brown, which is scarcely perceptible without close examination except on the upper back and towards the tips of the elongated tertials; the lower back and rump are white, very beautifully vermiculated with dark somewhat greyish brown; upper tail-coverts similar, but the ground colour tinged with rufous fawn; central tail feathers with the basal portions similar to the upper tail-coverts, but with a slightly more vinaceous tinge and with the elongated attenuated portions, which in fine males are at least five inches in length, black with a slaty bloom on them. Primaries and their greater coverts black, with a slaty bloom on them towards the tips, the hinder ones with a more or less extensive buffy white patch on the inner web at the tip. Secondaries black, but with more or less of the outer webs (less in the earlier—more in the later ones) similar in colour to the tertiaries. Lateral tail feathers bright rufous buff, tipped with pure white and with several widely separated, moderately broad, more or less cuneiform transverse black bars. Lower breast grey; abdomen, sides, flanks, vent, tibial and tarsal plumes and shortest lower tail-coverts white, the leg feathers sometimes slightly tinged with fulvous and with traces of narrow transverse barrings on the tibia.

Female.—(As I believe, relying on the recorded sexing of my specimens, but they may be young males). Much resembling the male, but differing in the much greater extent of pencilling and barring. The whole mantle and the whole of the breast (not merely the upper breast as in the male) is distinctly and conspicuously lineated with narrow zig-zaggy dark brown lines. The mantle of the male is, doubtless, when closely looked into, excessively finely vermiculated with blackish grey or greyish brown, but in the female these markings are very conspicuous, and on the longer scapulars and tertials are broader apart, and fully as distinctly marked as those on the upper breast of the male. The linear elongated portion of the central tail-feathers in the female does not apparently exceed three inches in length. The bill too is decidedly smaller than in the male.

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PTEROCLES ARENARIUS

THE LARGE OR BLACK-BELLIED SAND-GROUSE.

Pterocles arenarius, *Pallas.*

Vernacular Names.—[Bhut-titur, Buk-tit, Bur-titur (and a dozen other variations), *Upper India ;* Kashmiri, *or* Burra Bhatta, *Hariána and Bhattiána ;* Katinga, *Sind ;* Bunchur, *Peshâwar ;* Siah-sin (Persian), *Khorasan ;* Bagrikara (Turkish), *N. Persia.*]

THE Large Sand-Grouse is essentially a western form, and despite the countless myriads in which it occurs, in most years, in parts of North-Western India, it is merely a cold weather visitant, and breeds, so far as I yet know, nowhere within the limits of the Empire.

During the four coldest months of the year, it is to be found throughout the Punjab, Rajputana, the Doab, Southern Rohilkhand and Oudh, Bundelkhand, the northern portions of the Central India Agency, Western Khandesh, Northern Guzerat, the eastern portions of Cutch and Káthiáwár, and Sind. It is, however, in most years only really abundant in Northern and Western Rajputana, and the Punjab west of Umballa ; it becomes less plentiful as you proceed eastwards, and throughout the eastern and southern portions of the tract above indicated it is more or less rare, and towards its extreme limits a mere accidental straggler.

Westwards, it extends to the Canaries ; is common in Portugal and Spain (straggling rarely into other parts of Europe), North-Western and Northern Africa, Palestine, the Caucasus, Persia, Western Turkestan and the country east of the Caspian, Affghanistan, and Beluchistan.

Although Scully recorded it doubtfully from Yárkand, I do not believe that it occurs there or anywhere eastwards of this in Central Asia ; the note he describes (S. F., IV, 179) was clearly that of a *Syrrhaptes* and not of a *Pterocles.*

Although, according to Jerdon, Col. Chesney saw this species in millions in *Arabia* (by which *Turkish* Arabia, commonly called Mesopotamia, must be meant), its occurrence there has not been confirmed, and is the less likely that it has not yet been observed in any part of North-Eastern Africa, to which, zoologically, Arabia is more closely allied than to Asia or Europe. In all probability *P. alchata* was the species seen by Chesney.

DIRECTLY IT begins to be at all hot, the large Sand-Grouse leaves us. In 1868, when the heat set in early, every bird had left the neighbourhood of Sirsa and Fázilka by the end of February; and though, up in the cooler extreme north-west about Peshâwar and Mardân, I have known them to occur during the first week of April, it is very rare to meet with them elsewhere after the 15th March. About Sirsa, they never, that I know of, appear before the 1st of October, and in warm years not before quite the end of that month. Lower down in the Doab, as at Etâwah, they are scarcely, if ever, seen before the 15th of November, or after the 20th February, though during December and January considerable numbers may almost always be found in suitable tracts to the south-east of that district.

Vast sandy plains, with water easily accessible, are what they like, and wherever these occur in North-Western India, there the large Sand-Grouse are sure to be found during the coldest portion of the year.

The countless multitudes that occur in some seasons between Ferozepore and Mooltan, on either side of the Sutlej, and throughout Sirsa and Bahâwalpur, are scarcely credible.

They go to some watering place regularly every morning, later in the very cold weather, earlier as the temperature increases. Driving, in November 1867, the last stage into Fázilka, from Ferozepore, parallel to, and on the average about two miles distant from, the Sutlej, over 100 flocks or parties of from four or five to close upon one hundred each, flew over us during our 15 miles drive. They were all going to the river to drink or returning thence. Necessarily we can only have seen an exceedingly small fraction of the total number that that morning crossed that little stretch of road.

Further inland, if I may use the phrase, where rivers are too distant for them to resort to, they frequent, in this portion of the Punjab, the few tanks that are to be found. Long before the Sand-Grouse leave, most of these have dried up, and it often happens that there are only two or three watering places left within a radius of many miles. When this occurs, the native sportsmen station themselves in ambush near these few places, and slaughter multitudes, while fowlers catch them in nets or snares laid at the water's edge. Khan Nizám-ud-din tells me (and, unlike most natives, what he says may be relied on) that he and two European Officers, stationed one at each of three tanks, bagged between them 54 brace one morning in two hours.

Ploughed land is a very favourite resort in the early mornings, and there they squat basking in the sun's earliest rays, huddled up so close together, and, where the party is large, in such dense masses, that large numbers may be bagged with a couple of charges of large shot, if one is only lucky enough to be able to approach within 50 yards. In the Aligarh district, my old shikári crept up to and shot every one of a party of seven

before me, and last year in Jodhpore I came upon fully two thousand, grouped together in a clump little, if at all, more than thirty yards long by ten wide; and, though I did not get within 80 yards of them, I yet dropped three by two barrels into the mass as it rose.

I have but seldom met with them on *stubbles* (though they affect these a good deal, I hear, in some parts of the country), or in any ground under crop, nor have I ever found them on or about the more or less scrub-clad bases of the low hills so common in Rajputana. Wide, open sandy plains are their favourite resorts; and, though they do sometimes feed on bare ploughed lands, it is rare to find them on these except when basking in the early morning or when taking their mid-day siesta. This, like all the Sand-Grouse, they always take when the sun is hot, though on cold, cloudy, gloomy days, they are moving the whole day. They bustle about in the sand or loose loam like old hens, until they have worked out a depression that fits them, and then in this they sit a little on one side, first with one wing a little under them and the uppermost one a little opened, and then, after a time, they shift over to the other side, so as to give the other wing its turn of grilling. During their siesta they are never closely packed; they are scattered about irregularly, one here, two or three there, and so on; and though at this time you may generally by circling get within reach of them, they are by no means all asleep, and the instant you halt or raise a gun, or fix your eyes on any of them, the alarm note is sounded, and they are off with a strong rapid flight, which most of us, at one time or another, have found too much for the second barrel.

In parts of the country where they have not been shot at, especially when they first arrive, you may easily approach within thirty yards, shoot two or three on the ground, and perhaps a couple more as they rise, but after having been worried a good deal they become the wildest birds imaginable, and then the only plan is to get them driven over you, which, with good native fowlers, is almost a certainty, and affords at the same time most difficult shooting and capital sport. It takes a straight eye, No 3 shot, and a hard-hitting gun, to bring down a clean-killed right and left out of a party going over you, 30 to 35 yards high, at the pace these birds *can* go.

It is not uncommon, particularly in the early part of the cold season, to meet with party after party consisting of birds of one sex only, but this separation of the sexes is by no means invariable even in November and December, and is much less frequently seen as the season advances.

If you watch a flock feeding, you will see that they observe no order, but straggle about in all directions; some individuals continually fluttering up and alighting a yard or so away, and every now and then a dozen springing up together, taking a

circling flight and settling pretty nearly at the spot they rose from. You will also, especially if it is late in the season and the morning young, observe, as a rule, a vast amount of skirmishing going on between the males; not regular fights, but a series of pecks delivered, and perhaps a little hustle. I watched a large flock once from a distance of perhaps a hundred yards from behind a sand hill, and it seemed to me that no two males came within a foot of each other without coming to blows in a mild way.

Every one in India knows the peculiar clucking note of this and the Common Sand-Grouse, but I really do not know how to put it on paper.

As to food, I have been often assured that they eat insects freely. I can only say that I have examined the stomachs of scores without ever finding anything in them beyond small seeds and grains of various kinds and little pieces of grass and herbs. On one or two occasions I have, no doubt, seen a single ant or tiny beetle, but these were, I believe, picked up by accident along with some seed or other and swallowed involuntarily. There are always, or almost always, small stones, usually quartz pebbles, in the stomach; sometimes only one or two, sometimes a great number.

As I have already said, I do not think that the Large Sand-Grouse breeds with us, but it may do so on some of the moderately elevated plateaux of Kábul or Khelat, and it certainly breeds on the Persian plateau, at from four to seven thousand feet elevation, and at similar altitudes in Western Turkestan. Further west it seems to breed in all the countries already referred to in defining its range.

It lays, probably early in June, three eggs (as *exustus* does) in some slight depression in the soil. The eggs, Tristram says, are placed two in a line, and one outside them, but I doubt whether there can be any invariable rule on this point, as I have found those of *exustus* in all kinds of positions. Of the eggs, Dresser says:—"In shape they are oval, rather elongated, tapering equally towards each end, and in colour are light stone-colour or buff, more or less marbled with very indistinct purplish grey under-lying shell-markings and light brown over-lying surface blotches, which latter in some specimens are drawn in fantastical shapes; and in most of the eggs the dark markings are more or less collected round one end. In size they vary from 1·85 by 1·3 to 2 inches by 1·35."

No doubt they are elongated, cylindrical eggs, varying much in ground colour and in the amount and intensity of markings. One I saw, collected I believe by Dr Tristram, had a dull, pale fawn coloured ground, and was profusely mottled and blotched with two shades of a pale somewhat rufous brown and purplish dusky.

THIS SPECIES does not vary very much in size. I have measured and weighed a very large number with the following results :—

Males.—Length, 13·75 to 14·75 ; expanse, 27 to 30; wing, 9·0 to 9·9 ; tail from vent, 4 to 5 ; tarsus, 1·1 to 1·25 ; bill from gape, 0·64 to 0·8. Weight, 1lb to 1lb. 4 ozs.

Females.—Length, 13·38 to 14·37 ; expanse, 27·38 to 28·5 ; wing, 8·7 to 9·4 ; tail, 4·13 to 4·15 ; tarsus, 1·0 to 1·1. Weight, 15 ozs to 17 ozs.

The feet and the back of the tarsi are grey, in some an earthy grey, in some pale French grey, or pale plumbeous, or dark greyish plumbeous ; the claws darker and horny ; the irides are brown ; edges of eyelids pale lemon ; the bill is pale bluish grey, or pale plumbeous, often darker, sometimes blackish, at the tip.

THE PLATE, held at a little distance, is as good a representation of the bird as could be desired. In the majority of specimens, however, the buffy portions of the plumage are lighter and yellower and less rufous than in the specimens figured, but the birds vary much in this respect.

I cannot say much for the queer little figure in the background, which is intended to represent a young male ; like the female, but with the spots on the breast already partly obliterated by the coming grey of the mature plumage.

PTEROCLES SENEGALLUS

THE SPOTTED SAND-GROUSE.

Pterocles senegalus, *Linné.*

Vernacular Names.—[Nandoo Katingo, Gutu, *Sind.*]

WITHIN our limits, the Spotted Sand-Grouse is only common in Sind and Jeysulmere, but it straggles eastward of this into the Punjab, Rajputana, Cutch, Northern Guzerat, and Northern Káthiáwár, in the neighbourhood of the Runn; never, however, so far as I yet know, occurring east of the 73° E. Long. The most northerly point from which I have received it is Shahpur on the Jhelum; the most southerly, Pátri at the south-east corner of the lesser Runn, and Nawánagar in Northern Káthiáwár. I have it from Pokaran in Jodhpore and from the Lúni near the borders of Jodhpore and Balmir.

Except in the semi-desert portions of Sind, and possibly Jeysulmere, it is only a cold weather visitant to India, and even where, in Sind, some of the birds appear to be permanent residents, the great majority of those met with in the winter are, I believe, migrants.

Beyond our limits, this species occurs in suitable localities in the plains of Khelat, along the Mekran Coast, in Mesopotamia, Palestine, Arabia, Egypt, Nubia, and Somali Land, but curiously enough it has not been recorded from Abyssinia, in the low coast lands of which it must occur. In the Libyan desert, and, Rüppell says, the coast of Barbary, and in the extreme south of the Sahara, it also occurs, but it is very doubtful if it extends so far west as Senegal, and if it does not, it would have, according to a certain school of writers, to take Lichtenstein's name of *guttatus.*

NUMEROUS AS the Spotted Sand-Grouse are in certain localities in Sind, they are, as a rule, only met with within a comparatively narrow zone; that within which the inundation tracts abut on the dry uplands, and cultivation and desert inosculate.

In the immediate neighbourhood of the hills themselves, I never saw them, except in parties, coming up for a few minutes to drink at some perennial stream, close to where it

debouches from the hills; and again, I equally missed them well down into the heart of the cultivated area.

Denizens of the desert, as their plumage shews them to be at the first glance, they never advance far into the cultivation, to the immediate neighbourhood of which they are attracted by the facilities for obtaining food.

There is little to be said about their habits; they keep together in parties of from five to fifty; very often each flock, at any rate in winter, consists of one sex only; but occasionally I have found both sexes intermingled. They trot about on the dry soil, picking up seeds and occasionally insects, or squat motionless sunning themselves in the early morning sun. They fly off to drink, morning and evening, often to comparatively distant localities, and generally comport themselves much as *P. exustus* and *arenarius* do, but are more birds of the wilderness than these. I have never seen or heard of them in the enormous flocks or packs, in which the Large and Pintail Sand-Grouse are so often seen.

In Jeysulmere, as Dr. Newman informed me, and as I subsequently found, they are very abundant in the desert tracts south of the capital, slightly undulating stony plains, mingled with stretches of blown sand.

Their flight is rapid and easy, but wherever I have met with them they have been less shy and easier of approach than *arenarius.* Their note is peculiar, and has been happily described as a gurgling sound, not unlike that produced by blowing through a small tube, one end of which is immersed in water. It has been syllabled as *quidle, quidle, quidle*, and this really does recall the note to a certain extent. It has appeared to me that the males of this species are more peaceably inclined, and not so given to perpetually skirmishing with each other as are those of *arenarius.*

Their food is mostly seeds, but I found a good many insects mixed with these in the stomachs of those I examined, and they are, I infer, less purely vegetarians than the Large Sand-Grouse.

Whether it is on this account I cannot say; indeed it may have been only fancy, but I have always considered that the flesh of this species was less dry and more palatable than that of any other Sand-Grouse. Even admitting this, I can only say that, after eating hundreds of Sand-Grouse of most of our Indian species, I think them very poor food, only at all good when baked in a ball of clay, gipsy fashion.

Mr. James writes that he has "seen this bird in the Kurrachee and Hyderabad Districts, in Sind, also in the south-east corner of the Runn of Cutch in the Ahmedabad District. It is a permanent resident; common in Sind, but not so in the Ahmedabad District. Its note is very like that of *P. exustus,* but not so harsh, and easily distinguishable from it. It frequents cultivated ground and is easily approached on foot. It associates

in very large flocks at times. It is very fond of the south shore of the Manchar Lake, where thousands may be seen at a time drinking, and then basking on the smooth short grass, which the receding of the lake has left behind.

"Where the birds abound, it would at all times be easy to get eight or ten brace, or more. They can be easily approached by walking up to them rapidly, making as if to pass them, and shooting directly they are within shot, in exactly the same way as *P. exustus* is procured."

NOTHING HAS ever been recorded of their nidification, but some, at any rate, do breed in Sind, as I possess an egg obtained there.

This single egg I owe to Mr. William Blanford, who extracted it from the body of a female which he shot on the 20th March 1875 in the desert west of Shikárpur, Upper Sind. In shape and size the egg is similar to that of *exustus*, but the markings are much more sparse than in any egg of that species that I have ever seen. The egg is, of course, cylindro-ovoidal; the ground colour is pale yellowish stone, and the markings, which are thinly distributed over the surface of the egg, consist of olive brown spots and tiny blotches, with a few crooked and hooked lines; besides these, a few pale purplish lilac or inky grey spots, streaks, and smears, having a sub-surface appearance, are scattered irregularly about the surface of the egg.

Having been extracted from the body of the bird, the egg has, of course, but little gloss. It measures 1·5 by 1·05.

I HAVE measured numerous specimens in the flesh with the following results:—

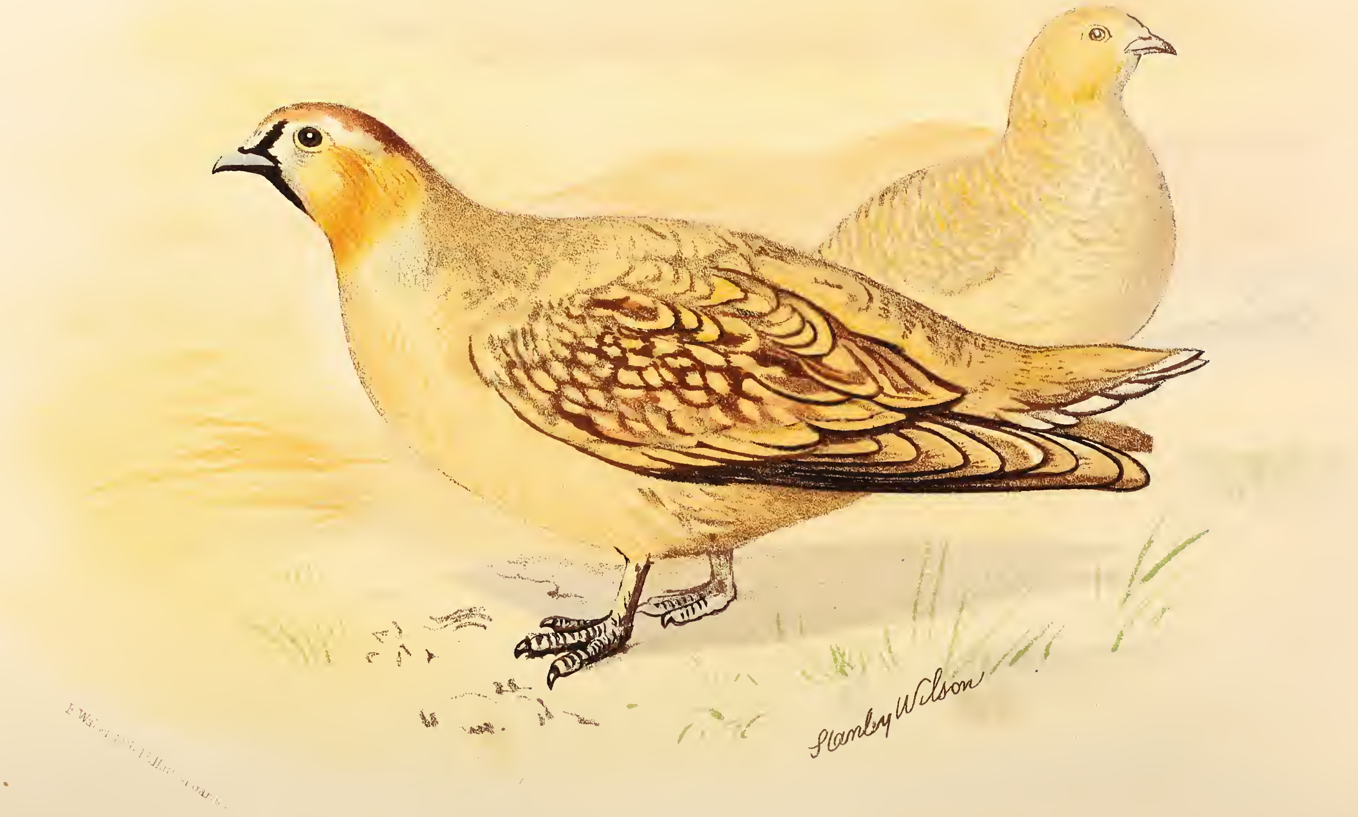
Males.—Length, 13·4 to 14·7; expanse, 23 to 23·7; tail from vent, 5·3 to 6; wing, 7·5 to 7·9; the wings when closed reach to within from 2·3 to 2·8 of the end of the longest tail feathers, *viz.*, the central ones, which exceed the others by from 1·75 to 2; bill at front, 0·44 to 0·47; tarsus, 1 to 1·05. Weight, 9 to 12 ozs.

Females.—Length, 12·4 to 13·1; expanse, 22 to 22·6; tail from vent, 4 to 4·6; the central tail feathers only extending from 0·75 to 1·2 beyond the rest; wing, 7·3 to 7·5; bill at front, 0·4 to 0·44. Weight, 8 to 9 ozs.

Irides brown; bare orbital skin yellowish; bill pale plumbeous, bluish grey or bluish white, always somewhat more dusky towards the tip; feet pale plumbeous or bluish white, paler towards the upper surfaces of the toes, and whitish on scales.

THE PLATE is a cruel caricature of the species, just sufficiently like to permit of identification, but miscoloured to a degree only explicable on the hypothesis of *somebody's* colour-blind-

ness. In the first place, the spots on the female are not dingy purple, but greyish black, and her under surface is fawny white and not yellow. In the second place, the whole figure of the male is many shades too dark—the prevailing tint should be a light desert fawn, and the most prominent feature is the delicate, pale French, almost pearl grey, of the forehead and broad supercilium, which, extending on to the nape, thence as a broad though not perfectly defined band, encircles the whole neck, gradually shading off into the fawn. Fortunately for our supporters, this is the very worst plate in the three volumes.



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PTEROCLES CORONATUS

THE CORONETTED SAND-GROUSE.

Pterocles coronatus, *Lichtenstein.*

Vernacular Names.—[Katinga, *Sind.*]

IT is only on the extreme western confines of the Empire, in the desert portions of Sind Trans-Indus, that the Coronetted Sand-Grouse occurs within our limits, and there only as a cold weather visitant, and in small numbers. A single specimen has been killed in the southern portion of the Dera Gházi Khan District, but I know of no other instance of its occurrence outside the limits above indicated.

In the Cutchee of Khelat, and in Beluchistan, it is not very rare, and Blanford obtained it on the Persian plateau. It has also been recorded from Arabia, Egypt, Nubia, Kordofan, and the southern portions of the Sahara, but its real area of distribution is as yet very imperfectly defined.

I HAVE never myself seen this species alive, nor can I find any single thing recorded of its habits, food, or the like. Heuglin only tells us that in its voice and habits it precisely resembles the Spotted Sand-Grouse.

TRISTRAM OBTAINED the eggs in the more southern portions of the Sahara, where, he says, it supplants *P. arenarius.* He adds : " I found it only in small companies of four or five, but this may have been owing to the extreme scarcity of plants in the district where it roams. The egg is of an ashy white, with a few, almost obliterated, pale-brown markings."

MY FEW specimens measure in the skin:—

	Length ;	Wing ;	Bill at front ;	Tail ;	Tarsus.
Males.	10·5 to 11·7 ;	7·1 to 7·23 ;	0·58 to 0·68 ;	3·3 to 3·75	0·9 to 0·95.
Females.	10 to 10·7 ;	7 to 7·15 ;	0·56 to 0·66 ;	3·4 to 3·5 ;	0·9 to 0·93.

THE PLATE is rather a pretty picture ; an artistic idealization and not a portrait, and therefore worthless for our purposes, though the black markings about the head will probably suffice for the identification of the male. In the male the strongly-marked blue grey supercilium is scarcely indicated, while as to the female, a dark-looking bird, densely banded with black, or in some places brownish black, I can only suppose that the artist began, but wholly forgot to finish, his picture.

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PTEROCLES FASCIATUS

THE PAINTED SAND-GROUSE.

Pterocles fasciatus, *Scopoli.*

Vernacular Names.—[Pahári bhut-titur, Bhut-bun, *North-Western Provinces;* Palki, *Belgaum;* Handeri, *Southern India;* Kal Gowjal haki, (Kanarese), *Mysore;* Sonda polanka, (Telugu.)]

ALTHOUGH the Painted Sand-Grouse, to my mind the most beautiful of the genus, is widely distributed throughout India, it is very local in its distribution, and is chiefly found, so far as my experience goes, on and about the bases and in the neighbourhood of dry, low, rocky, bush-clad or sparingly-wooded hills.

In parts of the country, however, I have found it affecting the high *kheyras*, or mounds of deserted villages, met with in many jungles, and there are forest tracts in which the ground is stony and a good deal broken up by ravines in which it is particularly abundant.

It is, of course, entirely unknown in low, rich, unbroken alluvial plains, in the major portion of the North-Western Provinces, for instance, the whole of Lower and Eastern Bengal and Assam, and equally so on the Malabar Coast and the extreme south of the Peninsula and Ceylon.

Generally, I think it may be said to occur in localities such as I have above described throughout India Proper, north of the 12° N. Lat., and west of the 85° E. Long.

Southwards, it extends at least as far as Chitaldroog and Túmkúr in Mysore, eastwards to Sirguja and Palamow in Chota Nagpore, and northwards, at any rate as a straggler, to Attock and even Hazára, where, in 1863, Mr. Greig shot a pair on the banks of the Indus at Darban in the Amb country.

Although very common in Bundelkhand and to the south of Mirzapur, the real home of the species appears to me to lie in the so-called Mewât Hills, and their continuation, the Aravalis, which run down in a wide curve from Delhi, through Ajmere to Mount Abu, a broad straggling belt, or series of belts, of stony ridges and detached barrow-like mounds.

So far as is yet known, the Painted Sand-Grouse is exclusively Indian, and does not even extend into Sind, Khelat, or Kábul.

ALTHOUGH LARGE numbers may be found in the same *enceinte*, they never associate in the huge flocks in which the other species of Sand-Grouse occur. Ten is the largest pack that I have ever flushed at one time, and except from September to February, they are as a rule only met with in pairs.

Of their habits little can be said, for, except when coming down in the mornings to drink, one rarely sees them before they rise. They are seldom found at any great distance from the base of their hilly homes, unless during the hot weather, when want of water compels them at times to straggle away for some miles. Except on cloudy days, they usually work some way up the hills, after 10 o'clock, and bask at the base of some thorny shrub or Euphorbia bush, but in dull, cold weather they seem to remain the whole day below. In the mornings they may always be found in the scrub and amongst the grass and rocks at the bases of the hills, and even in small patches of cultivation, here and there dotted about these, where they feed on grain, seeds and the like ; not at all, so far as I have observed, on insects. On the 4th of January 1868 I shot 13 brace near Bhoondsee in the Gurgaon district, the crops of every one of which, I noted, contained exclusively *Moth*, a common Indian pulse.

Where they are abundant they afford extremely pretty shooting, and 20 to 25 brace is by no means an out-of-the-way bag for two good guns. Even though at first flushed in parties of 7 to 10, they break up into pairs and singles after the first shot, and lie well. I have never seen them wild or rise at greater distances than 30 or at most 40 yards, and very often they whirr up within a few feet. They rise with a chuckling chirp, fly low, and soon alight again, often however running a considerable distance after they have alighted. They run extremely well, compared with other Sand-Grouse, as I have repeatedly noticed when standing above whilst others were shooting below. For a moment, I have often mistaken them for Grey Partridges.

Although their flight is strong and tolerably fast, they offer an easy shot, and can be dropped with charges and at distances that would afford little prospects of a kill in the case of *exustus*.

Their plumage is very delicate, and half the feathers of the back and breast are often knocked out by the fall when they are shot. The aural orifices are very large, and being only partially covered with feathers of which the webs are very far apart, are conspicuous ; but the birds do not appear to hear particularly well, or if they do, they are very tame or stupid, for they continually rise at one's feet, and if much disturbed lie so close that they are almost as hard to raise as Button Quail.

Their crepuscular habits are undoubted, though I cannot say that I myself have often noticed them after dusk.

Mr. Adam tells us that he had been shooting with Thákur Kesri Sing, of Kucháwan, who on their way home told him of a much-frequented drinking place of this species. It was agreed to go and shoot a few.

"Accordingly," he says, "we at once started for the pond. The patch of water—it could hardly be called a pond—was situated in a grove of Acacia trees close to a large masonry well. We reached the place about half an hour before sunset, and then I observed a few Pigeons and Doves, a Wag-tail and a Redstart coming to drink; about half an hour after the sun had set, or when it was dusk to all intents and purposes, I heard the peculiar cluck, cluck, which *fasciatus* makes when rising, and some six or seven birds flew rapidly through the clump under the trees and settled down on the bank about eight feet from the water. There they lay perfectly still for two or three seconds, and then all of them commenced a rapid run down to the water. By this time others came flocking in, and in about five minutes I could see that there were about fifty birds collected. It was now so dark that, although only about twenty yards distant from them, I required my binoculars to see the birds.

"I fired at a group of six and killed two; the other birds flew off, uttering their clucking call; all flew very low round the tope, and again settled down near the water. I again fired and killed five with one barrel, and when the birds returned, I killed three more. After the third shot none returned."

Mr. R. Thompson also writes:—

"I can quite corroborate Dr. Jerdon's observations as to the crepuscular habits of this species. It is quite nocturnal, and feeds and goes to water even in the darkest night. I have seen the birds arrive at the edge of a plain at dusk, and remain feeding and going to water during the dark hours before the moon got up. I have frequently too noted parties of six or seven flitting about noiselessly over an opening in the forest long after sunset.

"During the early part of the rains these birds entirely leave the forests and jungles, and then, all through the rains, live in the open country, exactly as *P. exustus* does, but they are never noisy like the latter.

"Large numbers of the Painted Grouse are taken during the rainy season by bird-catchers, who, approaching under cover of a screen made of green leaves and twigs, drop a circular net, suspended to a hoop and held out horizontally at the end of a long bamboo, over the birds, which, as a rule, never seem to suspect that there is danger at hand."

This species is in no degree migratory, but appears to live all the year round and breed in almost precisely the same places, although, as the seasons change, they may move a few miles and vary the nature of the cover they affect.

MOST OF the numerous eggs that I have received have been found in April and May, but the nearly-allied *exustus* breeds so irregularly, and at such different periods, that it is, *à priori*, probable that the breeding season of the present species also, varies much, and is not by any means confined to these two months. Indeed, Mr. R. Thompson took a nest near Chánda on the 28th November, and again, Captain Butler, writing from Mount Abu, remarks: "I shot a pair of Painted Sand-Grouse, with three young ones not quite full grown, in the plains below, about twenty miles from this, in February last, which shows that *P. fasciatus* breeds in this neighbourhood in the cold weather, as these young birds must have been hatched, I should say from their appearance, during the previous month."

They make no nest, but merely scrape a slight depression in the soil (occasionally, it is said, thickly lined with grass), at some spot more or less overhung or sheltered by a tuft of grass or a low bush, and lay occasionally four, as a rule three, but not uncommonly only two, eggs.

Mr. R. M. Adam says:—

"My first nest was found on the 3rd April. I have since obtained fresh eggs in May. The nest, I was told, was simply a hollow scraped in the ground, with a number of small pieces of stone round the edge and some loose grass for a lining.

"The number of eggs in each nest varied from two to three, but in one nest four were found. When fresh, the eggs vary from a deep to very pale salmon colour, but when blown, the colour changes in a few days to a rich cream colour, and all are pretty uniformly spotted and speckled with light lavender and rusty."

Writing from Chánda (Central Provinces), Mr. R. Thompson says: "I send you two eggs of *Pterocles fasciatus*, which I took on the 28th November in the Mohurli Forests.

"The nest contained three eggs, of which one unfortunately got broken. It was placed on the ground on a slight rise; neatly and well put together, saucer-like, made of dried grass, bits of dried leaves of bamboo and other plants. The soil was sandy, with a thin forest growing on it, and the nest was placed under the shade of a small tree. There was no cover in the immediate vicinity of the nest; in fact, for three or four yards all round there was nothing but thin short grass. I accidentally arrived at the spot, and whilst talking to a friend, the female bird got up close at our feet, and I saw the nest immediately."

Mr. E. C. Nunn sent me, from Hoshangabad, the first eggs of this species that I ever saw. The eggs were of the usual long cylindrical Sand-Grouse type, but the colouration resembles that of several of our Indian Goat-Suckers, and but for the careful extraction of the young chick, which accompanied the eggs in spirit, I might have believed them to belong to some large species of Goat-Sucker.

Since then I have obtained and taken a large number of the eggs of this species. As a body they are very regular, obtuse-ended, cylindrical ellipsoids, the shell very smooth and glossy, the ground colour a delicate pale salmon pink, with a good many, somewhat widely scattered, specks and tiny streaks of brownish red, very generally much more numerous towards one or other end, and with a good many small pale inky purple spots and clouds almost exclusively confined to that end where the markings are most numerous.

Specimens are occasionally met with in which the markings are very sparse, and I have one specimen in which they are absolutely and entirely wanting.

Not unfrequently the markings form a pretty perfect zone towards one end, and here and there an egg is met with exhibiting six or eight large deep brownish-red blotches. Pale pinky white, white, and somewhat buffy stone-colour grounds are also met with.

Dr. Jerdon remarks: " I have had the eggs brought me, very cylindrical in form, of a dull earthy green with a few dusky spots; but these most assuredly were eggs of *P. exustus* and not of our present species, *fasciatus*.

In length the eggs vary from 1·3 to 1·62, and in breadth from 0·93 to 1·05; but the average of forty eggs is 1·42 by 0·98.

THE SEXES differ but little in size. From a very large series of measurements recorded in the flesh I find that—

Males.—Measure, Length, 10·5 to 11·25; expanse, 19·75 to 22·5; wing, 6·4 to 7·0; tail from vent, 3·25 to 3·75; tarsus, 0·88 to 1·0; bill from gape, 0·58 to 0·7. Weight, 6 to 7·5 ozs.

Females.—Length, 10 to 10·5; expanse, 19·5 to 20·5; wing, 6·38 to 6·65; tail, 3·25 to 3·5; tarsus, 0·8 to 0·9; bill from gape, 0·55 to 0·6. Weight, 6·38 to 6·75 ozs.

The colours of the soft parts vary somewhat. I have recorded the *feet* as dirty yellow, pale reddish olive, pale dingy brown, pale orange brown; the *irides* as brown, the skin round the eyes yellowish green, and again bluish yellow; the *bill* as brown, reddish brown, reddish horny, dingy orange red, and dark orange red.

THE PLATE is excellent, but the bill should be darker, and with a brown or reddish tinge. In some males the light markings of the back and rump are much more buffy and less rufous than in the specimen figured, and similarly in some females the upper surface is altogether lighter and less strongly marked.

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PTEROCLES LICHTENSTEINI.

THE CLOSE-BARRED SAND-GROUSE.

Pterocles lichtensteini, *Temminck.*

Vernacular Names.—[*None?*]

IT is only in the Trans-Indus portions of Sind that this pretty Sand-Grouse has as yet been observed within our limits.

Until I discovered it in 1872 at Gul Muhammad, Mehar, in Upper Sind, it was not known to occur outside North-East Africa, where in Egypt, Nubia, Abyssinia, and Somali land, it would appear to have its home. Jerdon, it is true, says that it is common in Arabia, and so it not improbably is, but I cannot discover that he had any authority for the statement. It has not yet been observed in either Beluchistan or Southern Persia, but it must almost certainly occur in the former at any rate.

In 1876, Captain Wise procured and sent me several specimens, some from the Erie Hills and others from the Kurrachee District, where in some seasons it is not uncommon.

IN SIND they seem to be only winter visitants, almost, if not wholly, absent in some years, and never seen in any *great* numbers.

With us they are generally met with in pairs or parties of three or four, in the neighbourhood of some little patch of cultivation, or where broken, rocky ground or scrub afford some kind of cover. They lie well, and though they fly fast enough, like all their congeners, when well under weigh, rise an easy shot.

Blanford, in his Zoology of Abyssinia, tells us that "this bird has precisely the same habits as the closely-allied *Pt. fasciatus* of India. It is rarely, if ever, seen on open sandy plains.

"It keeps to bush and thin tree jungle, and is usually found solitary, in pairs, or, at the most, two or three pairs together. I once came upon a considerable flock in January, and possibly at that time these birds may collect in large numbers, but in May, June, July, and August, it was rare to see more than four

together, except about watering-places. When disturbed, this Sand-Grouse rises with a sharp cackling cry.

" It does not rise high, and usually settles again after a short flight.

" All kinds of *Pterocles*, as is well known, fly to water at particular hours in the day, the hours varying with different species. *Pt. exustus* drinks about 9 A.M. and 4 P.M. In the present case, the drinking hour is at daybreak in the morning, and at dusk in the evening.

" In the semi-desert country west and north-west of Massowa, in which *Pt. lichtensteini* abounds, and there are but very few places where water is found, the scene at each spring of an evening, after a hot day especially, is very interesting. At Saati, Ailat, and Ain there was a constant rush of these birds from sunset till dark, and again in the morning before sunrise. Singly and in small flocks, uttering their peculiar "queep-queep"-like note, they flew up and down the water course, on their way to or from the water, keeping only a few feet above the bushes and low trees, the noise of their wings being heard in the dusk before the birds themselves appeared."

Von Heuglin (Orn. Nord. Ost. Afr.) says:—" During the hottest part of the day these Sand-Grouse keep in families of three to eight or more (at times even in flocks of hundreds) on low hills, or in shallow hollows dotted over with loose stones, harmonizing closely with their own colour; they are also to be found amongst low leafless bushes and in places thinly sprinkled with desert plants.

" In the forenoon, and again towards evening, they forage together busily, and feed then in cultivated places in maize, indigo, and cotton fields, at threshing floors, on roads frequented by caravans, and in valleys where there is wild vegetation.

" As twilight comes on, they become really lively; the separate parties swarm together and alight with deafening noise to drink on sand banks in some stream, or at the desert springs. Their far-resounding call during sunset and night sounds much like the sharp whistle of the hunter through his fingers; the note is generally double, but is sometimes single, and is entirely distinct from the cry of *Pterocles guttatus*, *coronatus*, and *exustus*. It produces a peculiar effect on the traveller, who, after a long hot day's march, is resting beside a half dried-up pool in some lonely valley, when suddenly the sharp whistle of one of these birds, spectre-like in the dim light, darting over head with arrow-like swiftness, rings out amid the wonted stillness of the waste.

" On moonlight nights these birds never roost at all, and there is really no end to the clapping and striking of wings and the whistling and croaking of these noisy fowl as they straggle about on the ground, especially in the neighbourhood of the desert springs, with lowered pinions and up-turned and out-

spread tails. In captivity these birds are intractable, violent and quarrelsome; they swell out their crops and strut round and round like cock pigeons, croaking at and hustling each other, and with backs upraised striking with their wings.

"Nowhere have we met with the Close-barred Sand-Grouse in such enormous multitudes as at the wells of Tadschura, and at the torrents of the neighbouring coast in the Eisa-Somali region."

OF THE nidification of this species, nothing appears to be on record beyond the following very vague remarks of von Heuglin:—
"Occasionally we came across the nests of this species; they were found on the slopes of the highland in thin dry brushwood, and contained two cylindrical-shaped eggs much the colour of dirty and faded Peewits' eggs. The breeding season is the beginning of the rains. The nest is only a little hollow in the desert sand."

I HAVE only measured a single pair, of which the following were the dimensions:—

Male.—Length, 10·7; expanse, 21·; tail from vent, 3·2; wing, 6·65; wings, when closed, reach to within 0·7 of end of tail; bill at front, 0·54; bill from gape, 0·65; tarsus, 1·05. Weight, 8 ozs.

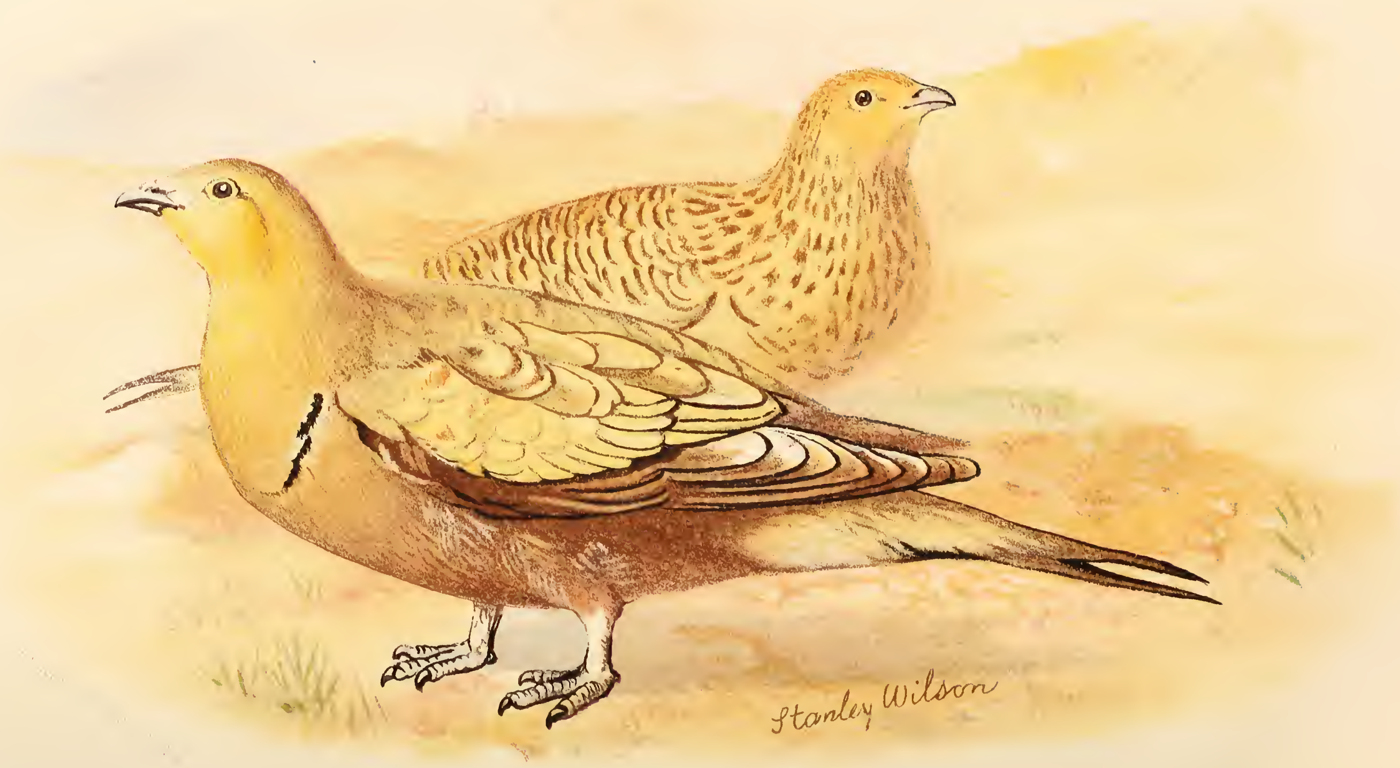
Female.—Length, 10·37; expanse, 20; tail from vent, 3; wing, 6·6; wings, when closed, reach to within 0·7 of end of tail; bill at front, 0·55; from gape, 0·62. Weight, 8 ozs.

Legs wholly feathered in front; feet orange yellow; reticulations white; claws dusky, tipped yellowish; bill fleshy brown, darker in the female; irides brown; orbital skin yellow.

THE PLATE, though very defective, will yet, I believe, suffice to enable sportsmen to identify any specimens they obtain.

The female seems to be a mere preliminary sketch, which might, had the artist chosen to take the trouble, have been finished into a correct picture.

It may be well to explain that, although this species closely resembles *P. fasciatus*, the males are distinguishable at a glance by the entire absence of the barring all round the lower throat and neck in *fasciatus*, by the much bolder character of the barrings on the back of *fasciatus*, and by the abdomen in *fasciatus* being black with crescentic white marks, instead of white with crescentic black ones as in the present species; the difference in the abdomen holds good in the females, and besides the whole chin and throat is spotless isabelline in the *fasciatus* female, while it is albescent, throughout closely speckled, with blackish brown in the female *lichtensteini*. The upper surface of the female in both species belongs to the same type, but that of *fasciatus* is more rufous and has bolder markings.



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PTEROCLES EXUSTUS

THE COMMON SAND-GROUSE.

———o———

Pterocles exustus, *Temminck.*

———o———

Vernacular Names.—[Bhut-titur, Bukht-titur, Kumar-tit, Kuhar, &c., *N. W. Provinces, Punjab, &c.*; Butabur, Batibun, *Sind;* Popandi, *Bheels;* Pakorade, Pokurdee, Pokundi, (Marathi), *Khándesh, Deccan, &c.*; Palki, *Belgaum;* Jam-Polanka, (Telugu); Kal gowjal haki, (Kanarese), *Mysore;* Kal-kondari, (Tamil.)]

———o———

THROUGHOUT India Proper, where the rainfall is moderate, the soil fairly dry, and the country open and tolerably level, the Common Sand-Grouse abounds. Towards the east and south its general distribution is much that of the Painted Sand-Grouse, though the particular localities it affects are different, but it is a western form which extends into India and not a purely Indian form, and it is common in places (for instance in Sind,) to which *P. fasciatus* does not extend.

It is a bird of the level, sparsely wooded, sandy countries *par excellence*, and though it may be shot in sandy plains *close* to hills in Rajputana, unlike the Painted Sand-Grouse, it eschews hills, has no liking for scrub, and absolutely avoids damp, swampy, low-lying tracts, jungles and forests.

Bearing this in mind, it may be said that it occurs in all suitable localities throughout the whole of the Punjab, Sind, Rajputana, the N. W. Provinces and Oudh, the western parts of Behar, and of Chota Nagpore, the Central Provinces and the Central India Agency including Bundelkhand, Berar, the Nizams Territory, the whole Bombay Presidency, except the sub-Ghat littoral,* Mysore,† and the Northern and Central portions of the Madras Presidency.

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* Mr. Vidal writes :—

"This species is not found at all in the Konkan, nor on the eastern slopes and spurs of the Western Ghats. A few birds are found on the barer plains and hill sides about thirty miles east of the Ghats, and as the country becomes more bare and treeless, and the scrub-clad hills and spurs are replaced by the open plains of the eastern districts of Poona and Satara, Grouse are found plentifully. In the neighbourhood of the Bhíma, Níra, and Yerla rivers they are especially numerous, and every morning and evening hundreds may be seen flying in successive small parties to drink all along the banks of these rivers. After drinking, the birds sun themselves on the bare stubbles and rocky plains for half an hour or so every morning. By taking up a position on the river bank close to any favourite drinking place, very pretty shooting may be had, and a considerable bag be made."

† Mr. Davidson says :—

"This species was rather rare in Mysore, though I found a few about the Túmkúr district." Another correspondent, however, says :—"I have met with this bird throughout Mysore. It is exceedingly abundant in the Chitaldroog district."

It must not of course be forgotten that single birds of this species, as of many others, may now and again be met with quite beyond its normal limits. A single specimen of *Stercorarius pomatorhinus* was caught at Moulmein; a single Likh was shot at Sandoway in Arakan; a single *Phaëton flavirostris* at Dilkhusha in N. E. Cachar; and a single bird of this present species in the Botanical Gardens, Calcutta. In this, as in all other cases, it is only the normal limits that I seek to define, though I shall always be only too glad to record the occurrence of stragglers beyond these.

Outside our limits we only certainly know of its occurrence along the North of Africa, from Algiers, in Egypt, Palestine and Arabia Petræa, in Northern Nubia, and along the shores of the Red Sea as far south as Massowa in Abyssinia. Hutton tells us that it is common throughout the southern parts of Affghanistan. Doubtless it also occurs in Beluchistan, and probably in many places along the Arabian *Coast*, if not in the interior, but I do *not* as yet accept its occurrence in either Central Asia, Southern Europe, or Senegambia; all of which are localities commonly (and as I think on insufficient evidence) assigned for this species.

THE COMMON Sand-Grouse, though very frequently met with in considerable packs numbering from twenty to two hundred individuals, is never, so far as my experience goes, seen in those enormous flocks which *P. alchata* and, in a somewhat lesser degree, *P. arenarius* affect. In all parts of the country where I have shot them, I have most frequently seen them in parties of from five to thirty.

In their habits they are most regular and methodical. Almost the moment the sun is above the horizon (except in very cold weather, when they are a little lazy) they may be seen trotting about and feeding in stubble fields, near the margins of scanty patches of cultivation surrounded by waste land, or on old fallows scantily dotted about with grass, silver-scale, and similar wild seed-bearing plants.

They live wholly on seeds, and no small seeds seem to come amiss to them. I have found millet, grass seeds, pulses of various kinds, and all kinds of, to me, unknown seeds in their crops, but very seldom even a single insect, though I have noted two cases in which I found, in one ants, in the other small beetles, amongst the seeds.

From about 8 to 10 A.M., according to season, they are off to some stream, river, or tank to drink, and where, or at times when, water is scarce and drinking places few and far between, very considerable numbers resort to the same place and afford opportunities for very pretty sport, if several guns lie up at distances of from one to two hundred yards from the pool and shoot the birds fairly as they come and go high over head. Their flight is

then swift and strong, and they will carry off a good deal of shot. As for the native plan of lying up close to the water and *potting* party after party as they alight, I hardly think that it comes within the category of sport, though it may yield huge bags.*

Their approach is always notified, by their peculiar chuckling, far-reaching double call, which they continually utter during flight, and which, even when one is on the alert, is often the first intimation received of their passing over head. They may often be seen flying very high up, so high that, despite their peculiar shape and flight, it would be difficult to make certain what they were but for their far-resounding cry.

Arrived at the water, round which, if at all alarmed, they circle several times, they drop suddenly on to some smooth spot not far from the water's edge and there squat motionless, at times for a few seconds, at times for two or three minutes. Then they run quickly to the water's edge and drink a good hearty drink. Then they pick about a little in the sand, very often wash themselves freely, perhaps take a second short sip, and then, *presto*, with one consent, the whole party is off like a shot. Others may be coming or going, but the several parties take no notice of each other.

After the morning drink, they again resort to feeding ground, *not* that where they fed earlier, but much more open and bare ground, ploughed fields and perfectly open sandy plains, and there they feed in a desultory sort of way, now squatting, now toddling about, till the full heat of the day comes on, when all subside into little hollows or little nooks behind some clod, and enjoy their noontide siesta, much as I have already described in the case of other species.

By 3 or 4 o'clock, according to season, earlier in cold, later in hot weather, they are again on the move, feeding sometimes where they have rested, but more commonly in some adjoining field or dry jhíl, to which they move, not as a rule in one flight, but by a series of little flights, some in the rear rising and settling in front, and so on.

At from 4 to about 6 o'clock, earlier or later again according to season, they are off for their evening draught. If there is plenty of water about, they do not, according to my experience, go twice *running* to the same spot, but of course in many parts of Rajputana and the Punjab they have no choice; there may be no other water within a dozen miles, and then drink they must, and no amount of firing will keep the poor things off for that evening, though the next day they will abandon the neighbourhood, even though they have eggs. I know of a

* Writing from Sind, Mr. Doig remarks :—

"The general way of shooting them here is from the back of a camel, and a good many may be killed this way, but the biggest bag I have known made was obtained by Mr. Davidson, who hid himself close to a pool of water where these birds were in the habit of drinking, and in one morning before breakfast got fifty-two couple."

case in the Sirsa District in which this cruel sport was practised by two guns down at the water's edge, and a great number killed, and during the next week a large number of eggs were found deserted and destroyed (I suppose by crows and mongooses) in what was known to be a favourite breeding place two or three miles from the tank.

Towards evening they settle down for the night, in some quite open place, and whereas during the noonday nap, they are scattered far and wide in twos or threes, during the night they gather quite close together, I suppose for facility of watch and ward.

And during the night they must keep better watch than during the day, for often when crossing the huge Oosur plains in Etáwah after dark, at times after midnight, I have heard flocks of them rise at considerable distances from me. Moreover, I have never found their feathers about in the morning, as I have of so many ground-roosting birds, showing where a Jackal or a Fox has made a lucky hit. If one remembers how abundant this species is in many districts, and how superabundant in the same places Foxes, Jackals, and wild Cats, and also that the Sand-Grouse leaves a strong scent by which a dog will nose out a wounded one hidden amongst the clods of a ploughed field in a moment, it does speak well for *their* chaukidars that none of these little Sand-Grouse ever seem to fall victims to these midnight marauders.

Still native fowlers will at times surprise them, and during dark nights, in some fashion, creep up and drop a net over the entire party. The net used is a very light one, a truncated triangle, about 8 feet wide at bottom, 4 at top, and about 4 wide, attached to two light slender bamboos, each about eight feet long. The covey is marked as it goes to roost, and then the man about 10 o'clock (the night must be dark, and is all the better for being windy) steals up and drops the net over the whole pack. I went out several nights to try and be present at a capture, but on only one occasion were any caught, and then only two, but a few nights after, the men, who were *aherias*, and who were still in my camp, snaring ducks and quail, brought in some forty that they professed to have captured in this way at one haul, and they were polite enough to hint that it was the bad smell of a *European* that had foiled their efforts on previous occasions. They were, doubtless, humbugging in some way, but one thing is certain, that they do constantly manage to catch whole packs in some way or other during dark nights, and are, therefore, though they certainly do not *look* so, considerably sharper than "the beasts of the field."

Except when coming and going, as above indicated, to watering places, this species never *per se*, *I* think, yields much sport, as the parties are scattered far and wide, and you can never make sure of many shots ; but when out on what, as boys,

we used to call a "happy-go-lucky rampage," they contribute not a little to the amusement. They lie close, it is true, and as a rule are far from shy, but they are exactly, when squatting, the colour of the ground ; they rise with extreme rapidity, by choice just behind you, or in a line with some lagging beater, and, even under the most favourable circumstances, it is by no means *impossible* to fire both barrels without tangible results.

Although this species is a permanent resident and breeds with us, it moves about a good deal according to season, and especially where the country is not well drained and the soil is retentive of moisture, they desert large tracts, which at other seasons are suitable to them, during a part or the whole of the rainy season. Jerdon alludes to this in regard to Mhow and parts of Saugor, but during a heavy rainy season there is scarcely a single clayey or deep black-soil tract, where there are no gravelly uplands, that does not afford an illustration of it, and every one knows how, during the rains, the high blown sand ridges, so common in Upper India, and dotted along the tops with tufts of *Sarpatta* grass, are a certain find for any Bhut-titur in the neighbourhood.

THIS SPECIES lays almost anywhere, provided the situation is open and the ground dry at the time ; but the haunts it best loves, and where its nests may be found in greatest numbers, are scattered fallow or stubble, or newly-ploughed fields, dotted about on and surrounded by large semi-desert plains.

As to the breeding season, I hardly know what to say. I have found their eggs in almost every month of the year in one place or another, but in the North-Western Provinces the majority probably lay from April to June.

Further west and north, where the rainfall is very scanty, they must, I think, have two or more broods in the year.

Khan Nizam-ud-din, Khan Bahadur, the well-known Punjab sportsman, who has collected for me for so many years, always kept up a register, showing, from day to day, the various birds and eggs obtained, the localities in which found, &c., and this he always sent me with each batch of skins and eggs.

From his registers for 1869 and 1870, I find that he took nests of this present species on the subjoined dates in each year: this was at Arniwála, some fifteen miles east of Fázilka in the Sirsa District.

	1869.	1870.
January	......	......
February	......	3rd, 24th.
March	......	1st, 4th, 12th, 21st
April	......	21st, 22nd, 27th, 28th.
May	8th, 25th,	1st, 3rd, 5th, 7th, 15th, 28th.
June	16th, 17th, 30th.	11th, 15th, 21st, 30th.
July	1st, 2nd, 5th, 10th, 11th, 12th.	23rd.
August	......	......

	1869.	1870.
September	1st, 2nd, 3rd, 7th, 10th.	......
October	......	3rd, 22nd.
November	......	24th.
December	......	7th, 20th.

In some cases three nests were found in a single day. During these two years he sent me so many eggs that I begged him to collect no more, and so after 1870 these eggs are never mentioned.

To quote an abstract I made of his register for 1869: "In no case did he find more than three eggs in one nest. In one instance he obtained five eggs in one spot—three in one place and two about 3 inches distant—but he ascertained that these belonged to two different pairs. Fully half of these eggs were found in fallow fields; the rest in bare waste-land or desert-like sand. In only two cases were the eggs found in any way sheltered or hidden in the roots or tufts of grass. In every case the eggs were laid in a slight depression on the bare ground. No nest of any kind was met with."

This has also been my own experience, except that I have not *at all* unfrequently found the eggs more or less sheltered by low bushes, tufts of grass, or large clods.

Mr. William Blewitt says: "On the 9th March in a field in the Hissar District, I found a nest of this species containing *five* (!) almost fully incubated eggs. They were, as usual, placed on the bare ground in a shallow basin scratched out by the birds, some 5 inches in diameter and 2 inches in depth. They all belonged, I believe, to one pair, but in no other instance did I ever meet with more than three eggs in any nest."

I may note here that the Khan Sahib reported that, although he had never been able to meet with such a nest, the villagers, in localities where the birds were very common, said that they occasionally saw four eggs in one nest-hole.

From the Sámbhar Lake, Mr. R. M. Adam writes: "The Common Sand-Grouse is found here throughout the year in great numbers. It breeds here, and I have taken the nests in April and May.

"I have seen a nest here at the root of a tuft of sarpat grass, the leaves of which protected the bird from the sun's rays. The nest had a lining of loose pieces of grass, and contained three eggs."

This is another instance of the variable habits of this species. I must have taken at least thirty nests, the Khan Sahib fully double that number, and neither of us ever saw any sort of lining to the nest-hole, and yet not only Mr. Adam, but other good observers, have vouched for finding more or less of a grass lining on many occasions.

Captain Cock tells me that "the Common Sand-Grouse lays its eggs in a hollow amid loose stones (I speak of the environs of

Nowshera) in the months of May and June, usually on barren arid ground, the heat of which is terrible at that time of year. I have frequently found the eggs with their albumen semi-coagulated from the heat, and I fancy that, if the bird left its eggs for any time during the heat of the day, they would be baked!

"They lay three eggs, blunt at both ends. There is no nest to speak of, only a bit of stick or two."

Mr. A. Anderson remarks: "The Common Sand-Grouse breed throughout the Doab in March, April, and May (and no doubt later on), laying the orthodox number of *three* eggs, and *never four*, as stated by Jerdon. As a rule, there is no attempt at anything like a nest, the eggs being deposited in a slight depression on the bare ground scraped out by the birds, most frequently in an extensive plain.

"At times they lay only a pair of eggs. On the 2nd March 1873, when roaming over a plain covered for miles with *reh*,* which gave the ground the appearance of being carpeted with crisp snow, I flushed a Sand-Grouse which flew up *perpendicularly* out of sight. Looking down, I found a pair of eggs, which were laid *parallel* to each other in a slight hollow, sparingly lined with dry grass stems. My camp being close to this place, I amused myself in watching the birds incubating, feeding round about their nest, and dusting themselves after the fashion of fowls. On the 4th (there being still only two), I removed the eggs, shooting the sitting bird, which proved to be the male. As I approached the nest, the bird glided off, and skulked away in a crouching posture, so as to avoid detection, and then squatted.

"On the 19th October last, my friend Mr. Hastings took a clutch of eggs at Etáwah, which he sent to me; these eggs were either unusually late or early, as the case may be."

"In the Deccan," writes Mr. Davidson, "it breeds from December to June, eggs having been found by me in all the intervening months. I have never found more than three, or less than two, eggs, and three is the general number."

The eggs, like those of all the other Sand-Grouse, are long and cylindrical, like those of a Night Jar. The texture is fine and smooth, and they have generally a fine gloss. Not only in shape, but in markings also, do many of them strongly resemble those of some species of Night Jar. The ground colour varies much; in some it is a pale somewhat pinkish stone colour, in others greyish or dingy greenish white; in some pale *café au lait*, in others a somewhat light olive brown. Typically they are thickly spotted, streaked, or irregularly blotched, pretty uniformly over the whole surface, with two sets of markings, the one of darker or lighter shades of olive brown, the other a sort of pale inky

* A saline efflorescence, of varying composition.

purple, and these latter, which are most commonly streaks and clouds, seem to underlie the others. Different eggs vary much in the distribution, size, and intensity of these markings, as also in the relative proportion of the extent of surface covered respectively with what I may call the primary and secondary markings; in some almost the whole ground colour not occupied by the primary markings is clouded with the pale inky purple, in others only here and there a few spots of this colour are traceable; in some all the markings are small, very thickly set and freckly, in others they are bold, large, eccentrically-shaped blotches, comparatively thinly distributed over the surface. Some of the eggs are, as a whole, very much darker-coloured than others, and in some the ground colour might perhaps be best described as a faintly greenish-grey. As a rule, the paler the ground the paler the markings, and *vice versâ*. Exceptionally beautifully marbled eggs are met with, as also unmottled pale creamy varieties. I have never, however, seen one that could be mistaken for an egg of *fasciatus*.

The eggs vary in length from 1·32 to 1·6, and in breadth from 0·95 to 1·11; but the average of seventy eggs is 1·45 by 1·03.

IN THIS species the males average rather larger and heavier, and have decidedly longer tails. The following is a *résumé* of many measurements recorded in the flesh:—

Males.—Length, 11·75 to 13·75; expanse, 21·13 to 22·5; wing, 6·7 to 7·5; tail from vent, 4·38 to 5·87; tarsus, 0·9 to 1·0; bill from gape, 0·62 to 0·7. Weight, 8 to nearly 10 ozs.

Females.—Length, 11·0 to 12·25; expanse, 20·9 to 21·5; wing, 6·6 to 6·9; tail from vent, 4·0 to 4·8; tarsus, 0·8 to 0·85; bill from gape, 0·6 to 0·67. Weight, 7·5 to 8·3 ozs.

The feet and bill vary from pale slaty grey to pale plumbeous, or lavender blue; the irides are dark brown, and the orbital skin pale lemon yellow to pale yellowish green.

THE PLATE conveys a tolerable idea of the species, though the colouring of the back of the male is defective, and the whole picture of the female is vague and sketchy and too little of an exact portrait.

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PTEROCLES ALCHATA.

THE PINTAILED SAND-GROUSE.

Pterocles alchata, *Linné.*

Vernacular Names.—[*None?*]

A COLD weather visitant only to our Empire, the Pintailed Sand-Grouse does little more than just cross our western frontier.

It is only Trans-Indus, in Northern and Central Sind and the Punjab, that it is at all an abundant or regular visitant, but it occurs as an isolated straggler, from time to time, a good deal further east, and I have received specimens from near Kurrachee, from the Punjab from as far east as near Delhi, and from Rajputana from as far east as the Sámbhar Junction.

Outside our present limits, the Pintailed Sand-Grouse occurs in Eastern Afghanistan and Khelat; whether it does so in the western portions of these provinces is still uncertain. It has not been observed in Southern Beluchistan, nor on the Persian plateau, and, despite what Mr. Dresser says, Mr. Blanford never saw it in any part of Persia that he visited. Only at Bushire, Major St John noticed that it appeared in enormous flocks for a few days in March, migrating, but whither he could not discover. Of course it occurs in North-Western Persia, Tabriz way, but that is in a distinct zoological province, to which I shall return. North of the Persian plateau (though it does not apparently extend into *Eastern* Turkistan, late the territory of the Ataligh Ghazi), it occurs pretty well throughout *Western* Turkestan to the Caspian. Westwards, it is common along the Caucasus, and southwards into North-Western Persia and Armenia; is found in countless myriads during the cold season in Mesopotamia (Turkish Arabia), and has been recorded from various places in Asia Minor (in parts of which, as near Smyrna, it is known to breed), and Palestine. North of the Caucasus, it straggles into Southern Russia.

That it occurs in Arabia Proper there can be little doubt, but of the fact I find no record. Westwards, again, it does not appear to occur in Egypt, Nubia, or Abyssinia, but westwards of Egypt it occurs (though irregularly distributed) in suitable localities along the whole of North and North-Western Africa, and there are vague indications of specimens having been actually obtained at the Canaries.

Northwards of the Mediterranean it has wandered at times into Greece, Malta, and perhaps Sicily, and is not uncommon in suitable localities in Portugal, Spain, and Southern France, while stragglers have been obtained in Northern France, and a single specimen, it is said, in Hanover.

Of all the Sand-Grouse that inhabit or visit India, and half the known species do this, none habitually associate in such enormous flocks as the Pintail does during the cold season. Near Mardán, I have seen flocks of at least ten thousand, and in Northern Sind I know that they similarly occur at times in countless numbers. So, too, at Bushire and in Mesopotamia, I know from trustworthy observers of their being repeatedly observed, and always in gigantic packs.*

I have seen very little of this species myself, and only on a vast plain some miles from Hoti Mardán where, during the winter, they were in tens of thousands. This plain is partly barren, partly fallow, and partly cultivated with wheat, mustard, and the like. It was only on the barren and fallow land that I saw them. They were extremely wary, and it was only by creeping up a nala or small ravine that it was possible to get within even a long shot of them. Their flight is extremely rapid and powerful, to me it seemed more so than that of any of their congeners. They are very noisy birds, and whether seated or flying, continually utter their peculiar cry, which, though somewhat of the same character as that of *arenarius*, is unmistakeably distinct from the call note of any of the other species.

Those I shot, and, according to their account, most of the large series previously shot by my collectors, had fed entirely on green leaves, seeds, small pulse, and grain of different kinds. The gizzards contained quantities of small stones. There were several pools and places where the rain floods had not quite dried up, on the plain I have referred to, and the birds seemed to sit about much in their immediate neighbourhood.

One or two of my birds were very fat, so much so that it was difficult to skin them, but, as a rule, when cooked they were as dry and tasteless as the rest of the Sand-Grouse.

I was told that they were occasionally hawked with Shaheens, but their flight is so rapid and powerful that I should doubt much sport being obtained this way. I was also told that they could be shot by working a couple of Peregrines over them, when they allow a very close approach and almost refuse to rise.

They are easily caught in horse-hair nooses, as I myself saw.

They leave the Punjab, I understand, by the end of March or early in April, and do not of course breed with us.

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* It has been surmised that this species was the "Quail" of the Israelites.

SEVERTSOFF TELLS us that they breed in the Tian Shan and Karatall ranges, at elevations of from 1,000 to 4,000 feet. I have seen eggs collected near Smyrna. Salvin, in his "Five months Bird Nesting in the Atlas," says:—"The extensive sandy plains, termed the Harakta, of which El Tharf is one of the largest, are the only localities in which we met with this Sand-Grouse. It makes no nest, but scrapes a slight hollow in the sand, in which it deposits its three eggs. These are laid in May, the young being hatched about the second week in June. The only species of *Pterocles* which occur in these elevated districts are *P. alchata* and *P. arenarius*."

Canon Tristram, in his "Notes on the Ornithology of N. Africa," remarks:—"Though this bird does not approach so near the verge of cultivation northwards as *arenarius*, it is far more generally abundant, and continues to occur in vast flocks in winter in the M'zah and Touarick country, where I never saw *P. arenarius*.

"Its breeding habits are exactly like those of *P. arenarius*; but its egg is of a much richer fawn-coloured tint, covered, and sometimes zoned, with large maroon red blotches, while that of the other is of a paler hue, with obsolete pale brown blotches."

The eggs are, of course, of the usual type, elongated somewhat cylindrical ovals, with stout glossy shells. Dresser describes eggs that he had received from Algeria and Spain as "warm clay coloured or stone ochre, with a faint reddish cream tinge, marked with faint purplish grey underlying shell-markings and dark reddish brown surface spots and blotches scattered tolerably closely over the surface of the egg," and measuring from 1·7 to 1·97 in length, and from 1·22 to 1·25 in breadth.

THE MALES in this species are somewhat larger, and average decidedly heavier than the females.

Males.—Length, 14 to 15·5; expanse, 24 to 26; wing, 7·96 to 8·5; tail from vent, 5 to 7; tarsus, 1·0 to 1·13. Weight 10 to 12 ozs.

Females.—Length, 13·5 to 15; expanse, 24 to 25; wings, 7·5 to 8·15; tail from vent, 3·75 to 6; tarsus, 0·97 to 1·12. Weight, 8·25 to 11·25 ozs.

The feet are dirty or dusky green, in one specimen yellowish; the irides are brown; the bill varies in colour somewhat, and I have recorded it in different specimens, as "dusky green," "greenish brown," "brown," "dark brown," "slate colour."

THE PLATE would really be perfect *for a chromo*, had the feet not been wrongly coloured. I have never seen a specimen

making any approach to the pure pale lead colour adopted by the artist, neither is the orbital skin quite correct, according to my notes and recollections. Note that in the female the upper of the two throat bands is almost always much broader than in the plate, and that the upper tail-coverts in the male are buff and black, and very rarely almost white and black, as in the specimen figured. The markings on the crown of the male are often obsolete.

BESIDES THESE seven species of *Pterocles* (or Barefooted Sand-Grouse) that occur within our limits, seven other species are known, *viz.*, *P. personatus*, from Madagascar; *P. gutturalis*, from Southern and Eastern Africa; *P. variegatus*, from Southern Africa; *P. namaqua*, from Palestine (?), Transvaal, and Damara land; *P. bicinctus*, from Southern Africa; *P. quadricinctus*, from Senaar, Abyssinia, and Western Africa; and *P. decoratus*, of which a single specimen only is known, from the interior of Eastern Africa. Though largely represented in India, the genus is essentially an African one, and occurs with us, and elsewhere in Asia and Europe, only so far as an African element has percolated into these.

THE COMMON PEA-FOWL.

Pavo cristatus, *Linné*.

Vernacular Names.—[Mor, *Upper and Central India generally;* Tā-ūs (Muhammádans, often), Lan-duri (Pea-hen), *Mahratta Districts;* Menjur, *Western Dúars, &c.*; Mujur, *Nepal Tarai;* Mabja (Bhutia); Mong-yung (Lepcha); Moir, Moira, *Assam;* Dodé, Gáro Hills; Myl (Tamil); Nimili (Telugu); Nowl (Canarese), *Mysore.*]

AN Indian Bird *par excellence*, the Common Pea-Fowl, though widely spread throughout India Proper, does not normally extend elsewhere except into Ceylon and Assam.

Even within these limits it is not by any means universally spread; it likes water and cultivation, and in no way shuns the abodes of men. But there may be too much water, cultivation, and population to suit its taste. For instance, though common enough in Midnapore and Burdwan, it does not occur wild in the 24-Pergunnahs (though a few have run wild from the Oudh Gardens in Garden Reach) or in Jessore (unless possibly in the Sundarbans), or in Nuddea, or in the greater part of Hooghly, and many other districts might be mentioned in India Proper in which it is either wanting or extremely scarce.

It is not found really wild in Sind, though it has been introduced, of late years, into the Eastern Nára Districts, and occurs in a semi-domesticated state about Hyderabad and other places in Lower Sind. It does not occur in the Punjab Trans-Indus, nor does it, Colonel Graham assures me after careful enquiries, go eastwards beyond the valley of Assam.

Sadiya appears to be its easternmost limit. "I have now been," writes Colonel Graham, "over much of the country on both banks of the Brahmaputra, for 40 miles east of Sadiya, and have not seen a Pea-Fowl of any description, nor heard one.

"I have further examined the Khamptis, Singphos, and Digama Mishmis, coming from the east, and they deny the occurrence of any Peacock in their direction.

"The Common Pea-Fowl are all over Assam, but get very much scarcer as you go eastwards, disappearing altogether beyond Sadiya."

Colonel Coomber says:—"The Pea-Fowl is common enough in Assam. I have met with it in every district, and on both sides of the Brahmaputra. I have seen no second kind. It is

excessively common in the Gáro Hills and in others of the hills south of the Assam Valley." It does not, however, Captain Williamson tells me, occur in the Khási Hills.

Heretofore the idea has been that the Common Pea-Fowl did not go eastwards of the Gáro Hills and the low valleys running into these, and that elsewhere in Assam it was replaced by the Burmese bird ; but I can find no evidence to support this view. I have never been in Assam, nor have I ever seen specimens of Pea-Fowl thence, but at least a dozen officers now in Assam write to say that the Common Pea-Fowl is abundant there, and that they have seen no other.

It is said to be found in Chittagong, but this requires confirmation. I cannot learn that it occurs in Sylhet, or Cachar, or Manipur, or in the Eastern Nága Hills, or in Tipperah, so that it is difficult to believe in its existence wild in Chittagong, though it may not impossibly have been introduced there.

In the Andamans, it has been introduced, and now, I believe, breeds freely there in the neighbourhood of the settlements ; for a long time it was entirely confined to Ross Island, where the vociferous cries of scores, at all hours, whenever a gun was fired or a gong struck, rendered it, to my notion, a serious nuisance.

As a rule, the Pea-Fowl is not a bird of high elevations. On the Nílgiris I know it occurs as high as 5,000 feet at Cook's Hill, on the N. E. slopes of those mountains, and it may even, as Jerdon says so, though I have been unable to verify this, occur up to 6,000 feet, but it does not, I believe, ascend the Pulneys, or the Ceylon Hills, to elevations of above 3,000 feet ; and in the Himalayas, though in the river valleys it penetrates, as in Central Garhwal, far into the hills, it is rarely seen above 2,000 feet. I have however shot it at over 3,000 feet in the lower ranges that overlook the Dún, and at over 4,000 near Biláspur, west of Simla ; and Mr. Young writes to me that it "occurs in one locality in the north of Mandi-Doralban, and in Kulu Seoraj at an altitude of 6,000 feet, in both instances haunting one particular valley and not extending beyond it." I suspect, however, that at both these localities and near Bilášpur it has been introduced, and when Dr. Scully, writing from Nepal, says :—"It is found along the outer base of the sandstone range, about Bishiaksh, but not in any great numbers ; it does not extend further into the hills, nor occur in a wild state in the valley of Nepal ; nor does it, to the best of my belief, ascend the hills to a height exceeding 2,000 feet, if even that ;"—he is only, I think, describing the normal distribution of the bird along the entire southern face of the Himalayas.

BROKEN AND jungly ground, where good cover exists, near water on the one hand, and cultivation on the other, is the favourite resort of the Pea-Fowl, and wherever this favourable

combination exists within the limits indicated, there the Pea-Fowl is sure to abound.

Canals, with their grass and tree-clad banks, are, in Upper India, pet abiding places of the Pea-Fowl. I have seen a canal opened out through a dry bare Doab district, where only here and there a few of these birds, perhaps a dozen in day's journey, were to be met with; and ten years later, driving down the canal road (the canal by that time with high grass-clad banks and a belt of trees and grass on either side), I have counted several scores in one of the three-mile lengths that on the Ganges canal intervene between bridge and bridge.

But it is not only in such seemingly suitable localities that this species thrives amazingly; it is to be seen almost throughout Rajputana. In and about the rocky and semi-desert tracts, for instance, in which lie Jeypore, and the more ancient capital of that state, Umber, myriads of Pea-Fowl are to be met with. Everywhere throughout Upper India* a certain superstitious reverence attaches to the Pea-Fowl, and the mass of the population more or less dislike their slaughter; but in these Native States the prohibition is absolute, and no *man*, Native or European, can or does molest them, though tigers and leopards, if the people speak truly, are less amenable to authority.

Talking of these, is there, I would ask, any foundation for the universal belief that exists amongst natives throughout the length and breadth of the land, that these beasts feed largely on Pea-Fowl; that when these latter are surprised, especially by leopards, the cocks either fly at and buffet the leopards, or else stand paralysed with fear, in either case falling an easy prey to the cruel cat?

The late Colonel Tytler used to relate how one day, when stalking a Peacock, he was surprised to find that he had suddenly closely approached it, and that, bestowing no thought on him, it seemed intently gazing on a tiny patch of jungle just in front. Halting for a moment, he discovered a leopard stealthily crawling on its belly through the jungle towards the Peacock. He was much astonished; he had never heard of leopards in the neighbourhood, but his astonishment exceeded all bounds when, on his raising the gun (he had ball in one barrel), and covering the leopard, it suddenly threw up both its paws and shrieked in a voice hoarse with terror "*Nehin Sahib, Nehin Sahib, mut chulao*" (No sir, No sir, don't fire). He said that for a moment he

* Mr. Reid, however, writes:—"So far as I know, the natives of Oudh nowhere object to Pea-Fowl being shot; but if asked whether there are any in the neighbourhood, they will most likely reply in the negative. Generally speaking, however, there is no difficulty in getting them to give information, and frequently, without being asked, they will suggest a little Pea-Fowl shooting, and themselves enter enthusiastically into the sport.

"Although sportsmen, as a rule, do not care about shooting Pea-Fowl, it is as well that they should know that dogs are preferable to beaters for flushing the birds. They will hide from man, but rise at once when they find a dog on their track. In thick jungle, two or three plucky terriers answer the purpose admirably."

thought he must be going mad, floods of reminiscences of enchanted princes, fairy tales, wehr-wolves, and the like, flashed like lightning through his mind. The next, he saw a man very cleverly got up in a leopard skin, with a well-stuffed head, and a bow and arrows in one paw, standing before him.

From this man he learnt that he was a professional fowler, and that thus disguised he always pursued Pea-Fowl, as whenever able to get anywhere near them, they always allowed him to approach near enough to shoot them with his bow, or at times even to seize them with his hands.

Great numbers are noosed and snared by native fowlers, who imitate the cry of the male to perfection. In doing this, the fowler usually places one hand on his mouth and evolves the sound, apparently, from the depths of his chest.

The Pea-Fowl is at times omnivorous, and land-shells, insects of all kinds, worms, small lizards, and even tiny frogs may be found in their crops, but by choice I think they feed on grain and tender juicy shoots of grass and flower-buds, and I have scores of times examined their stomachs without finding a trace of anything else, although, had they been so minded, animal food of all kinds abounded around them.

Where numerous, they do much damage to cultivation, and being excessively fond of the buds of trees, are also very destructive to young plantations.

Nothing can be more charming than Colonel Tickell's account of this species :—

"Although Pea-Fowl are scattered over the forests of Central and South-Central India, they are much more numerous in the Trans-Gangetic provinces, and all along the Tarai. In the northerly parts of Tirhoot, on the Nepal frontier, I have seen upwards of fifty or sixty on the wing at a time, making for the forests when roused up by our elephants. So common, indeed, is this bird in the parts of India above enumerated, and so tame, and so much do the natives dislike their being killed, that the sportsman seldom molests them. Nevertheless, a Peachick is by no means to be despised on the table, and an old bird, cock or hen, furnishes grand stock for a tureen of good soup.

"To the south of the Ganges, the Peacock confines himself entirely to the wooded and hilly tracts, especially near cultivation, feeding at daybreak and dusk, and withdrawing at other times into the thickest jungle. In these countries—Rajmehal, the Dáman-i-koh, Beerbhoom, Midnapoor, Chota Nagpore, Singhbhoom, and so on, south to Sambalpur and Cuttack—it is as shy and wild as in Northern India it is tame and confiding; in fact, it is almost as difficult to stalk a deer as an old Peacock, and in my earlier years in India many a weary hour of profitless labour have I spent in endeavouring to creep within shot of some splendid fellow whose glorious train excited my ornitho-

logical cupidity. When followed in this manner, without a dog, the Peacock keeps running before the sportsman, gliding and slipping through apparently impervious thickets, occasionally stopping in some patch of grass, from whence, with outstretched neck, he regards his pursuer; and at length, if hard pressed, rising heavily on wing and flying far into the densest covert, leaving the baffled "gunner" to make the best of his way out into the open, where the morning sun may dry his clothing drenched with the chilling dew. Of an evening, one may obtain a good shot or two by walking through the jungle skirting a field of wheat, rice, or vetch, some fifty yards in advance of two or three beaters, who are instructed to keep that distance from you. Pea-Fowl thus invaded in the thick tangle of a luxuriant crop run very little, and will rise just in advance of the beaters, so as to give the sportsman a fair shot. A good thing is valued the more for its scarcity. The Peacock is sufficiently rare in the parts of India I am now referring to, to be there prized accordingly; and to see a magnificent fellow, with his long train, coming over you, and then tumble him over—head over heels, head over heels—with a thump on the ground as he crashes through the boughs, is by no means an unpleasant sight, to say nothing of its being very pretty ball practice.

"Pea-Fowl roost at night on high trees. The highest they can get in the jungle they inhabit; but they select the lowest branches for their perch. They are rather late in roosting; I have heard them flying up to their berths long after sunset, and when the Night Jars had been for some time abroad, flitting over the dusky jungle. The cock bird invariably leads the way, rising suddenly from the brushwood near the roosting tree, with a loud "kok-kok-kok-kok," and being presently followed by his harem—four or five hens. If marked to their roosting place, and if it be a clear moonlight night, they may be easily shot, for, not knowing where to go, they will frequently remain on the tree till fired at two or three times. When forced to quit, they fly towards the ground, and pass the rest of the night as well as they can, sometimes falling a prey to leopards or wild cats. If there are hills in the jungle, the Pea-Fowl select some prominent tree on the top, or half-way up. In the Nílgiris and other mountain regions in Southern India, says Jerdon, this bird ascends to the height of 6,000 feet above the sea; but in Sikhim (Darjeeling) and other parts of the Himalaya, not higher than 2,000 feet. For my part I have never seen Pea-Fowl at any elevation above the Tarai, though I have rambled about the hills in Sikhim at Pankabári, and near Bichiáko, and Harrakwári, on the Nepal frontier. In the jungle mahals and Singhbhoom, the Pea-Fowl roost on small hills, but descend to the cultivated valleys to feed. On the loftier hills of those regions, such as Dalma, Parasnáth, and the Chutia range above the Damoodur, I have never met with them.

"In the months of December and January the temperature in the forests of Central India, especially in the valleys, is very low, and the cold, from sudden evaporation, intense at sunrise. The Pea-Fowl in the forests may be observed at such times still roosting, long after the sun has risen above the horizon. As the mist rises off the valleys, and gathering into little clouds, goes rolling up the hill-sides till lost in the ethereal blue, the Pea-Fowl descend from their perch on some huge símal or sál tree, and, threading their way in silence through the underwood, emerge into the fields, and make sad havoc with the channa, urad (both vetches), wheat, or rice. When sated, they retire into the neighbouring thin jungle, and there preen themselves, and dry their bedewed plumage in the sun. The cock stands on a mound, or a fallen trunk, and sends forth his well-known cry, "pehau*n*—pehau*n*," which is soon answered from other parts of the forest. The hens ramble about, or lie down dusting their plumage, and so they pass the early hours while the air is still cool, and hundreds of little birds are flitting and chirruping about the scarlet blossoms of the "palás" or the "símal." As the sun rises, and the dewy sparkle on the foliage dries up, the air becomes hot and still, the feathered songsters vanish into shady nooks, and our friends, the Pea-Fowl, depart silently into the coolest depths of the forest, to some little sandy stream canopied by verdant boughs, or to thick beds of reeds and grass, or dense thorny brakes overshadowed by mossy rocks, where, though the sun blaze over the open country, the green shades are cool, and the silence of repose unbroken, though the shrill cry of the cicada may be heard ringing faintly through the wood.

"These birds cease to congregate soon after the crops are off the ground. The pairing season is in the early part of the hot weather. The Peacock has then assumed his full train, that is, the longest or last rows of his upper tail-coverts, which he displays of a morning, strutting about before his wives. These strange gestures, which the natives gravely denominate the Peacock's *nautch*, or dance, are very similar to those of a turkey-cock, and accompanied by an occasional odd shiver of the quills, produced apparently by a convulsive jerk of the abdomen. The same thing occurs in a turkey-cock—a little start and a puff and a short run forward, as if something had exploded unpleasantly close behind him. These are all blandishments, we are told, to allure the female, and doubtless have a most fascinating effect."

Mr. Reid remarks that:—

"Taking Oudh as a whole, Pea-Fowl are found abundantly wherever suitable localities occur, and they are specially numerous in the Tarai. They abound in the extensive dhák and thorn jungles so characteristic of many parts of the province, and the banks of rivers and nalas passing through these are

never-failing resorts. Forests with plenty of brushwood, well-wooded ravines and bamboo brakes, are all favourite haunts ; while they may also be found in a semi-domesticated state, dodging about village pán-fields, gardens and groves.

"They appear to be pretty regular in their habits, frequenting the same feeding-grounds by day, and returning to the same perch at night. Towards dusk they may be seen flying into the solitary banyan, and other wild-fig trees, that here and there rise above the level of the surrounding jungle, and segregated thus, it is not an unusual thing to hear them calling to and answering each other at all hours of the night.

"They rest in thickets during the heat of the day, and come forth to the fields and open glades to feed in the mornings and evenings.

"They live for the most part on grain when procurable, but do not object to insects and grubs, and—sorry am I to say it—snakes! Years ago—I kept no notes at the time, but remember the circumstance well—my cook took a small snake, about 8 inches long, from the stomach of one which I had given him to clean."

Adams tells us that :—

"At Kallar Kahár, in the Salt Range of the Punjab, there are several shrines where the Pea-Fowl collect from the neighbouring jungles to be fed by the fakirs and religious devotees. There at break of day, as the sportsman is clambering over the rough sides of the ravines in quest of Oorial (*Ovis vignii*), he will often be struck with the scene, as hundreds of male Pea-Fowl, in all their native elegance and beauty, dash down the glens with a rapidity of flight unknown to the denizens of the English farm-yard. Many sportsmen ignore this species, and will not allow it a place in their game-list. It is true that in many localities they might be killed with little trouble ; but among the dense and tangled jungles of the lower Himalayan ranges, it is wild and wary."

"Pea-Fowl," says Burgess, "abound in the jungles, clothing the slopes of the ghâts, and in some wooded districts in the interior. In the Deccan, in the wooded hilly portions of the districts of Jainkhair and Scogao, they were plentiful ; and a remarkably pretty sight it was to see them stalking about near the grain-stacks, or running along the bushy banks of the nalas. They are wary birds, and lead the sportsman a good chase when once they take to the low spurs of the hills, up which they run with incredible swiftness. The best plan to secure them is to wait for their roosting-time, under the trees to which they resort. Thick mango trees appear to be their favourite resting places."

Mr Vidal sends me the following note :—

"In the Ratnágiri District, Pea-Fowl are found here and there sparingly in suitable localities. Near the coasts they affect the

steep slopes that overhang the large tidal creeks, if well clad with trees and bushy undergrowth. Going up these rivers in a boat, Pea-Fowl may often be seen and heard about sunset, as they come down to the river banks to feed before roosting. Inland they resort to large temple forests with luxuriant undergrowth, hill-side jungles, and well-wooded ravines. They are also found sparingly in the Sahyádri forest, both on the summit and the western and eastern slopes.

"In no part of Ratnágiri are Pea-Fowl kept in a state of semi-domesticity as in other parts of India, and they are consequently wild and shy wherever found.

"In the Satara and Poona districts east of the Gháts, Pea-Fowl are found in large Babul *(Acacia arabica)* thickets, and in hill-side jungles, where the latter exist. In many parts of these districts Pea-Fowl are both plentiful and comparatively tame. In some native states, such as Sángli and Miraj in the Southern Mahratta Country, Pea-Fowl are jealously preserved.

"In the jungles and forests Pea-Fowl eat various fruits and berries, such as the Wild Fig *(Covillia glomerata)* and the Korinda, *(Carissa carandas)*. In the neighbourhood of cultivated ground the crop they particularly affect is maize."

Mr. Sanderson, so well known by his charming work on Elephant-catching and sport in Mysore, writes to me:—"Pea-Fowl are common throughout Mysore in the lighter belt of jungle that intervenes between heavy forests and cultivation, and in detached low ranges of scrub-covered hills in the open country. They are encouraged in places by the owners of cocoanut and other gardens, as it is a common native belief that they are enemies to snakes. They feed in the grain fields bordering on jungles, and do considerable damage when the grain is nearly ripe, and they move considerable distances at different seasons, tempted by ripening crops or jungle fruits.

"Pea-Fowl usually commence their discordant cries at half past two in the morning, and not unfrequently cry at intervals throughout moonlight nights. They raise a shrill clamour during the day on seeing tigers or other beasts of prey, or at unusual sounds, such as the firing of a gun in the jungles.

"Pea-Fowl run very fast, but the old cocks, burthened with tails six feet in length, are poor flyers, and I have frequently seen my men run them down during the hot hours of the day by forcing them to take two or three long flights in succession, in places where they could be driven from one detached patch of jungle to another.

"The old cocks are in full plumage from June to December, and then cast their trains.

"Pea-Fowl are, perhaps, the most wary of all jungle creatures. In beating for large game, where the sportsmen are posted ahead in trees, their presence may pass undetected by other animals, but rarely by Pea-Fowl.

"I have shot them on bright moonlight nights by beating the trees situated near cultivated lands where they are known to roost, and, on the 1st September 1872, I made a day after Pea-Fowl in lieu of Partridges, in some islands near Mandigiri, in the Hamavati river in Mysore, and by posting markers along both banks of the river, to prevent the birds taking to the main land, I bagged twelve cocks in full plumage after a day's hard work. The Natives have no feeling against their being shot in Mysore.

"I once shot a hen of a uniform dirty yellow colour, and saw another like her in the same locality.

"The native trappers imitate the various cries of these birds, without any artificial aids to the voice, very cleverly, and decoy them into snares laid for them. When caught, the bird's eyes are immediately closed by the stem of a feather being passed through both eyelids, so as to sew them together; they are then placed on a perch, and do not move though carried from place to place."

Albino, or at any rate white varieties, or nearly white ones, occasionally, as noticed by Mr. Sanderson, occur wild. They have quite a permanent breed at home of this white bird, and most of the white specimens that we see in menageries of Rájas here have been brought out from Europe by Jamrach and others; but I have known one or two of these shot in quite wild out-of-the-way places. Thus Dr. King showed me at Dehra a skin of a white specimen, a female, that had been shot in the wilds of the Eastern Dún, which precisely resembled the bird that Mr. Elliot figures as the female of another variety, commonly known as the Japanned Peacock, *Pavo nigripennis*, of Sclater. This latter variety has never yet been met with except in captivity, and it would be well for sportsmen to examine the specimens they shoot, and see if they ever do meet with it in a wild state.

In *nigripennis* the whole of the scapulars and wing-coverts (which in the common Peacock are cream-coloured with transverse blackish markings) are black, with narrow green edgings, which towards the carpal joint become bluish; the metallic green of the back is of a more golden tint, and the thighs are black instead of being pale drab as in *cristatus*.

Some people maintain that this is a distinct species of which the habitat is as yet unknown; others consider it merely a variety that has arisen in captivity in Europe. It would be extremely interesting should it prove to occur wild, and any one shooting such a bird should preserve the skin, however roughly.

THE PEA-FOWL, according to my experience, lives pretty much all the year round and breeds in the same neighbourhood. Colonel Tickell talks of multitudes of them migrating 100 to 150 miles yearly from the plains to the Tarai, but I have had no experience of this.

Canal banks fringed with trees, and traversing rich cultivation are, as I have already remarked, their especial delight, and in such localities I have found a great many nests, my search for them being stimulated by the conviction that a wild Peahen's eggs are delicious eating, far preferable to a Turkey's, or indeed to any other gallinaceous bird's eggs that I have ever tried.

Their nests are not confined to the plains, but in the Himalayas, Nílgiris, and other suitable ranges occur up to elevations of from 1,000 to 2,000 feet, and in the Nílgiris, it is said, to 5,000 feet.

The great majority of our Pea-Fowl in Upper India lay during July and August, but I have found eggs as late as the middle of October. The nest is made in amongst thick grass or in dense bushes, often on a sloping bank, and is a broad depression scratched by the hen, and lined with a few leaves and twigs, or a little grass. I have never myself found eggs in the abnormal situations described below by Mr. A. Anderson.*

I have never found more than eight eggs in any nest, and I think that six or seven are the usual complement; but natives say (and see also Miss Cockburn's remarks) that they lay at times much larger numbers.

Captain G. F. L. Marshall says:—"The Pea-Fowl breed during the rains in the Sahàranpur, Bulandshahr and Aligarh districts. The eggs are laid on the ground, usually among the thick underwood on the canal banks.

"Near Bulandshahr, I got six eggs on the 27th July; the shell is much pitted, pure fawn colour in some, and stained with darker brown in others.

"Again, in the Aligarh District, I found four fresh eggs on the 5th August; they were laid on the bare ground, inside, but near the edge of an old heap of dry sticks, round which grass had sprung up tall and thick; this small thicket was in an open plain close to a road with no bushes or other undergrowth near.

"But they sometimes breed later, and choose more exposed situations even than this. On the 31st August I took three fresh eggs laid without any attempt at concealment whatever: they were on the ground on a dry patch amongst very short grass under the trees on the canal bank; there was no undergrowth, and the eggs could be seen from some distance."

Mr. R. M. Adam remarks:—"I had eggs of this species brought to me in Agra on the 14th October. The eggs were a good deal incubated."

Mr. A. Anderson writes to me that "the Pea-Fowl breeds in the North-Western Provinces during June, July and August, the latter being about the most general month. About November, the young birds are the size of chickens, and are then well worth shooting for the table. Sometimes, though rarely, I have

* Mr. Whitten, however, tells me that he once found a nest near Chomoha, on the top of a large haystack.

seen ten and twelve chicks following one hen; but these, no doubt, are amalgamated broods, for I have never found more than six eggs in one nest (I believe, however, that they occasionally lay up to seven or eight), and sometimes only three or four.

"Three years ago, a chaprássi, who, from long practice, had become somewhat arboreal in his habits, brought me three fresh Pea-Fowl's eggs from an old nest of *Gyps bengalensis*. Shortly afterwards I saw the nest, which was situated on a huge horizontal bough of a Burgot, in the centre of some Dhák jungle, and on which all the Pea-Fowl in the neighbourhood were in the habit of roosting. I have every reason to believe my chaprássi, because he had no object in wishing to deceive me, and my own experience is in favour of these birds laying at high elevations (the same remark is applicable to a good many gallinaceous birds), for I have on several occasions taken their eggs from the roofs of huts in deserted villages, high mounds, and from the tops of masonry mosques on which rank vegetation grew to the height of two or three feet."

From the Nílgiris Miss Cockburn writes:—"The Peahen lays from ten to fifteen eggs and forms a nest by scratching a slight place in the ground, and gathering a few dry leaves and sticks. The eggs are generally found in June and July, and are a dingy buffy white."

The eggs are typical Rasorial ones, much like gigantic Guinea-fowls' eggs, with thick, very strong and glossy shells, closely pitted over their whole surface with minute pores, which are, however, more deeply indented and more conspicuous in some specimens than others. In shape, they vary much; some are very broad, some decidedly elongated ovals, so that some more resemble in shape an English Pheasant's eggs, and others are more like a Turkey's: all are more or less pointed towards the small end. The colour, within certain limits, also varies much; some are almost pure white, others are a rich *café au lait* or reddish buff; others, again, are dingy yellowish buff, but typically they are a pale pinkish *café au lait* colour. Occasionally specimens are met with thickly freckled with pale reddish brown, feeble reproductions of the Moonal's eggs; but the vast majority are entirely unspotted.

In length they vary from 2·55 to 3·0, and in breadth from 1·92 to 2·2; but the average of forty eggs is 2·74 by 2·05.

MALES, MEASURE.—Length, 80 to 92; to end of true tail only, 40 to 46; the train in full breeding plumage projects from 40 to 48 inches (and, I have been assured, even 54 inches) beyond the end of the true tail; wing, 18 to 19; tail from vent, 18 to 21; tarsus, 5·5 to 5·75; bill from gape, 1·9. Weight, 9 to 11¼lbs.

Females.—Length, 36 to 40; wing, 15·75 to 16·5; tail from vent, 12·75 to 14·5; tarsus, 5·0 to 5·2; bill from gape, 1·7 to 1·8. Weight, 6 to 8½lbs.

The bill is brownish horny; lower mandible paler and almost white at base; legs and feet greyish brown; irides dark brown; naked skin of face white to greyish hoary.

THE PLATE.—The bird is so well known that we considered it unnecessary to give any separate plate of it; but a smaller figure of it has been introduced below that of the Burmese Pea-Fowl, so as to enable the leading differences between the two species to be seized at a glance.

1/6

PAVO MUTICUS.

THE EASTERN OR BURMESE PEA-FOWL.

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Pavo muticus, *Linné.*

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Vernacular Names.—[Doun, Doung, Oodoung, (Burmese) ; Marait, (Talain) ; Toosia, (Karen) ; Bourong Marah, (Malay) ; Pegu-majura, (Bengali ;) *Calcutta.*]

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THE Eastern Pea-Fowl nowhere advances within the limits of India Proper.

It has been said to occur in Assam, and it *may* possibly do so, but all my recent enquiries lead to a contrary conclusion.

It occurs in Arakan, in Pegu, and throughout Tenasserim to the Pakchan, but is very rare in the dry upper parts, and is everywhere a bird very locally distributed.

In the northern portions of the Malay Peninsula it is not uncommon ; at a village called Yian, not far from Keddah, for instance, it is extremely (for this species) abundant, but it does not, so far as my collectors have ascertained, extend as far south as Malacca.

It has been recorded from Siam, and is in parts of Java very plentiful, but though the contrary has often been asserted, there seems no good reason to believe that it occurs in either Sumatra or Borneo.

It is well to notice that our Arakan and Tenasserim race is said to be darker and less vividly green than the Javan one.

IN MANY respects, as regards habits, food, and modes of life, the Eastern bird closely resembles the Indian one, but there is this essential difference, at any rate everywhere within our limits, that the Eastern bird is never found in thousands, throughout unbroken stretches of country a hundred or more miles in length, as the Indian bird is, but only in small colonies in isolated spots, whence you may often travel fifty or a hundred miles before coming across another colony.

Like its congener, it moves about feeding morning and evening, advancing into fields, if there happen to be cultivation near at hand, at these times, and retreating during the day

to dense cover. At night, of course, it roosts upon trees, and its call-note, like that of the Indian bird, which it closely resembles, is a harsh mew, mew, mew, which one might fancy to be the cry of some gigantic tom-cat in distress.

Very little is on record about this species, and even Colonel Tickell tells us next to nothing about it, but he writes so charmingly, and wraps his nothing so nicely in silver paper, that I am fain to quote what he says:—

"The habits of *Pavo muticus* are so similar to those of its congener as scarcely to admit of separate description ; but I should say it was a still more strictly sylvan or forest-haunting bird. Cultivation does not appear to entice it far from its leafy fastnesses, as it does the Bengal species, and it is in consequence more secluded, wilder, and difficult of approach, besides being far less numerous. I have never seen more than three or four of the Burman Pea-Fowl together, whereas the Bengal species unite in flocks of 30, 40, or 50. It haunts the thickest jungle, whether on level ground or on the sides of small hills, and is frequently found in the masses of elephant grass which so commonly skirt the smaller brackish creeks and nallas of Arakan. A specimen with a full train is seldom seen except in the beginning of the rains, which is the season of courtship. About August they moult, drop their long ocellated tail-coverts, and assume the simpler green-barred ones. The train appears again in the succeeding March or April ; but the moulting of this bird appears to be irregular, and I have seen cock birds with fine flowing trains in January and February. The hen incubates in the rains, but at uncertain periods ; the young just hatched have been brought to me at Moulmein at different times, from August till January. The eggs cannot be distinguished from those of the Bengal bird.

"The best, and certainly the pleasantest, way of shooting these birds is from a canoe, in the evening, when they come to the water to drink. The vast forests in Amherst, one of the districts of Tenasserim, are permeated by numerous streams, which form the only practicable roads through many parts of them. Such are the Houngthrau, the Wynyo, the Zummee, the Ataran, and some others. Near the hills from whence they issue these small rivers are beautifully clear, rippling over beds of white sand, or clean rocks free from weed. And nothing can be more luxurious than to float down them with a couple of Karens or Talaïns paddling now and then just sufficiently to allow of steerage way, and with an old fellow squatted astern at the helm. The air is cool on these crystal waters, and the boat glides smoothly and silently along, while each turn of the meandering stream brings some fresh beautiful prospect into view. Now we pass beneath a lofty roof of verdure, where giant trees on either side meet overhead, and, interlacing their foliage, cast a green shadow on the limpid pool. Bright flowers

clustering on parasites and creepers in endless variety, with orchids of every hue and fantastic shape, enliven the lovely avenue. Suddenly we sweep into a rock-girt space, where the grey walls inclose a pool so deep that the ribbed sand and boulders of the bottom melt away from view. Anon the boat emerges into a broader part, where shallows break the stream into many brawling currents, and the trees, retiring farther from us, disclose to view the purple mountains peering through their upper branches. In such spots as these, when the sun begins to draw near the western horizon, and the shades of evening gather over the water and the silent shore, the sportsman may get several snap-shots, before darkness settles on the banks, at Jungle Fowl, Pea-Fowl, Hill Pheasants (*Euplocomus*), or perhaps a Deer. If there be small islets in the river, covered with high grass or bush, he should search every one, sending a boatman on shore to beat the cover. Pea-Fowl and Jungle Fowl are very fond of emerging from the heavy jungle towards evening if all is quiet, and flying into such islets, where they scratch about in the sand, drink at the margin, and roost for the night, if undisturbed, secure from jungle cats.

"Karens have the same notion or idea as the Hindustanis entertain of the Tiger and Pea-Fowl affecting the same locality; and on the Ataran River a painful confirmation of this opinion occurred some twenty years ago. A gentleman was travelling up that stream in a boat to visit some teak forests, and one morning, hearing the cry of a Peacock on the bank, stepped on shore with his gun to shoot the bird. It ran before him, alluring him farther into the jungle, till about a couple of hundred yards from the water-side he was seized and killed by a tiger before help could reach him."

I HAVE not many measurements of this species, but I note that birds, even in full plumage, seem to vary much in size according to age.

The total length of the finest bird of which I have a record, from the tip of the bill to the end of the train, was 90 inches. The following are the details of all the *males* we have measured and weighed in the flesh:—

Length, to end of true tail, 40·0 to 48·0; train, projects beyond end of tail from 24·0 to 44·0; expanse, 50·5 to 60·0; wing, 16·75 to 19·75; tail from vent, 15·5 to 17·5; tarsus, 5·5 to 6·3; bill from gape, 1·95 to 2·5. Weight, 8·5 to 11·0 lbs.

Legs and feet dark horny brown; bill dark horny brown; lower mandible pale near base; irides dark brown.

The facial skin is of two colours—smalt blue and chrome yellow.

The blue runs from a point in front of and below the nostrils, where it is palest, to the gape, and from thence in a curved

line past, and 0·15 in front, of the orifice of the ear to within 0·35 of the top of the head, from thence curving round over the eye, and about 0·2 above it, down to the point below the nostrils already referred to; the blue is brightest just behind the eye.

The chrome yellow extends as a broad irregular band over the posterior portion of the face, immediately behind the blue. It is widest on the cheeks, where it may be 0·8 wide, and narrowest at the aural orifice, which it encloses, where it may be 0·45 wide. It begins at the gape and goes up as high as the blue. A broad patch of small scaly metallic green feathers runs across the blue from near the gape up to and just touching the lower margin of the eye. A line of similar feathers runs immediately over the eye, curving up a little posteriorly. A tiny patch of somewhat similar feathers above the aural orifice, and it is about this part that the chrome yellow is brightest; at the line of junction of the blue and yellow, the colours become slightly intermingled, the blue being perceptibly tinged with yellow, and the yellow with blue, producing a dirty greenish shade.

THE PLATE, though very fair, is not as a whole green enough, and is on too small a scale to show the colouring of the face well; the blue of the latter is much too pale, and the legs are too light coloured.

It may be well to mention, in case the plate does not make this sufficiently clear, that the Eastern Peacock is distinguished at a glance by the peculiar colouring of the face just described, and by its long occipital crest of straight, stiff, narrow feathers, with the greater portion of the webs, except just at the base, metallic blue, shaded with green; the longest of these crest feathers is sometimes nearly five inches in length. The entire forehead, crown, and anterior part of the occiput is covered with closely set scaly feathers, black at their bases, of which little is seen, and tipped with brilliant metallic blue, shaded with green. The feathers of the neck, all round, and breast are brown at the bases, which are completely hidden by the overlapping of the feathers, and at the tip have a broad band of bronze, greenish in some lights, vinous in others. Outside, this band is excessively narrowly margined with black, and inside this black line is an equally narrow golden green one; inside the bronze band the feathers are deep blue at the shaft, shading off to bright green; on the front of the neck nothing but the bronze band is seen. On the back of the lower neck just the points of the blue are visible, and on the breast the whole of the blue and green is more or less exhibited. Just where the head joins the neck at the sides and in front, the feathers are deep violet blue, greener, however, in some lights, tipped with green and some of them with bronze.

Lastly, whereas in *P. cristatus* all the lesser wing-coverts, the tertiaries and all their coverts, and the scapulars, are conspicuously barred and variegated with black on a rufescent or buffy white ground, in *muticus* these parts are uniform and unbarred.

ONLY THESE two species of Pea-Fowl are known to exist, though it is just *possible* (though not probable) that the supposed variety, *P. nigripennis*, already referred to under the common Pea-Fowl, *may* prove to be entitled to specific rank.

$\frac{1}{5}$

ARGUSANA GIGANTEA.

THE ARGUS PHEASANT.

Argus giganteus, *Temminck.*

Vernacular Names.—[Quou, Borong Quou, (Malay); Kyek-wah, (Siamese) *Bankasoon.*]

A DENIZEN of the densest forest tracts, it is only in the neighbourhood of the Pakchan River, that forms the extreme southern boundary of Tenasserim, that the true Argus Pheasant occurs within our limits. Sportsmen in Upper India persistently call our Tragopans, Argus Pheasants, but a glance at the plates will show how totally different the two are.

Mergui is often quoted as a habitat for this species, and in one sense this is correct, for the huge Mergui district, one might almost call it a province, does extend to the Pakchan, but the Mergui of maps, the town, is some 150 miles distant from the nearest forests in which (so far as we have been able to ascertain) the Argus roams.

In the Malay Peninsula we personally know of its occurrence from Kraw and Renong, on the southern banks of the Pakchan, right down to Johore, the extreme southernmost point of the Peninsula. It also occurs, according to Raffles and others, in Sumatra, and, Mouhot says, in Siam, but its exact limits eastwards on the continent have yet to be defined.

NO EUROPEAN has ever, I believe, shot any *number*, if indeed *any*, of this species but my friend Mr. Davison, and I shall therefore reproduce entire his account of it, lately published in our joint paper on the Birds of Tenasserim :—

"They live quite solitarily, both males and females. Every male has his own drawing room, of which he is excessively proud, and which he keeps scrupulously clean. They haunt exclusively the depths of the evergreen forests, and each male chooses some open level spot—sometimes down in a dark gloomy ravine, entirely surrounded and shut in by dense cane brakes and rank vegetation—sometimes on the top of a hill where the jungle is comparatively open—from which he clears all the dead leaves and weeds, for a space of six or eight yards square; until nothing but the bare clean earth remains, and thereafter he keeps this place scrupulously clean, removing carefully every dead leaf or twig that may happen to fall on it from the trees above.

"These cleared spaces are undoubtedly used as dancing grounds, but personally I have never seen a bird dancing in them, but have always found the proprietor either seated quietly in, or moving backwards and forwards slowly about, them, calling at short intervals, except in the morning and evening when they roam about to feed and drink. The males are always to be found at home, and they roost at night on some tree quite close by.

"They are the most difficult birds I know of to approach. A male is heard calling, and you gradually follow up the sound, taking care not to make the slightest noise, till at last the bird calls within a few yards of you, and is only hidden by the denseness of the intervening foliage. You creep forward, hardly daring to breathe, and suddenly emerge on the open space, but the space is empty, the bird has either caught sight of or heard or smelt you, and has run off quietly. They will never rise, even when pursued by a dog, if they can possibly avoid it, but run very swiftly away, always choosing the densest and most impenetrable part of the forest to retreat through. When once the cleared space is discovered, it is merely a work of a little patience to secure the bird by trapping it. The easiest way is to run a low fence of cut scrub round the spot, leaving four openings just sufficiently wide to enable the bird to pass through, and in these openings to place nooses fastened to the end of a pliant sapling, which is bent and kept down by a catch. This is the usual way, and the one I adopted to secure most of my specimens, as I found it as difficult to shoot as it was easy to trap them. The natives, however, have other ways of securing them, all dependent on taking advantage of the bird's idiosyncracy about keeping its home clean.

"One of these plans, which, though I have never actually seen it in operation, is, I am informed, really practised, is as follows:—A bit of bamboo, about 18 or 20 inches long, and a quarter of an inch wide, is shaved down till it is the thickness of writing paper, the edges being as sharp as a razor. This narrow pliant piece ends in a stout sort of handle at one end, 6 or 8 inches long, which is driven firmly into the ground in the middle of the cleared space.

"The bird, in trying to remove it, scratches and pecks at it, trying to dig it up, but finding all its efforts vain, it twists the narrow pliant portion several times round its neck, and taking hold of the bamboo near the ground with its bill, it gives a sudden spring backwards to try to pull it up; the consequence is that its head is nearly severed from its body by the razor-like edges of the bamboo.

"Another method is to erect two small posts, about 4 feet high and 3 feet apart, in the clearing, across the top of which a bar is firmly fastened; over this bar a string is run, by one end of which a heavy block of wood is suspended just under

the bar, while the other end is fastened to a peg lightly driven into the ground immediately beneath the block. The bird commencing, as usual, to clear away these obstructions, soon manages to pull up the peg, and thus releases the heavy block of wood, which falls and crushes it.

"The males are not at all quarrelsome, and apparently never interfere with each other, though they will answer each other's calls. The call of the male sounds like "how-how," repeated ten or a dozen times, and is uttered at short intervals when the bird is in its clearing, one commencing and others in the neighbourhood answering. The report of a gun will set every male within hearing calling, and on the least alarm or excitement, such as a troop of monkeys passing overhead, they call.

"The call of the female is quite distinct, sounding like how-owoo, how-owoo, the last syllable much prolonged, repeated ten or a dozen times, but getting more and more rapid until it ends in a series of owoo's run together. Both the call of male and female can be heard to an immense distance, that of the former especially, which can be heard at the distance of a mile or more. Both sexes have also a note of alarm, a short, sharp, hoarse bark.

"The female, like the male, lives quite solitarily, but she has no cleared space, and wanders about the forest apparently without any fixed residence. The birds never live in pairs, the female only visiting the male in his parlour for a short time.

"The food consists chiefly of fallen fruit, which they swallow whole, especially one about the size and colour of a prune, which is very abundant in the forests of the south, but they also eat ants, slugs, and insects of various kinds. These birds all come down to the water to drink about 10 or 11 A.M., after they have fed and before they, or at any rate the males, return to their parlours. They were very common about Malewoon and Bankasoon, and Mr. Osborne, the superintendent of the mines, preserved 32 males during a comparatively short period."

"I WAS unable," says Davison, "to find the nest, but, from what I could learn, the female builds a rude nest on the ground in some dense cane brake, laying seven or eight eggs, white or creamy, minutely speckled with brown like a Turkey's, and hatching and rearing her brood without any assistance or interference from the male. They are said to have no regular breeding season, the females laying at all times except during the depth of the rains. I secured two nestlings about a week old on the 28th of February.

THE FOLLOWING are the dimensions and colours of the soft parts recorded in the flesh :—

Males.—Length 70·0 to 73·0; expanse, to end of longest primaries, 49·5 to 52·0; tail from vent, 49·5 to 52·0; wing to

end of primaries, 18·0 to 19·0; to end of longest tertiaries, 33·0 to 34·5; tarsus, 4·5 to 4·8; bill from gape, 1·32 to 2·0. Weight, 4·5 to 5·5lbs.

Females.—Length, 27·25 to 30·25; expanse, 35·0 to 40·0; tail from vent, 12·5 to 13·0; wing, 11·5 to 13·0; tarsus, 3·62 to 3·75; bill from gape, 1·0 to 1·75. Weight, 3·25 to 3·75lbs.

The male has the legs and feet bright red, sometimes even a vermilion red. The female has them a paler and duller red, sometimes a litharge red; the bill and claws are white, slightly tinged blue; the cere, in the male, the same colour as the bill; in the female pale brown; irides wood to dark brown; the facial skin dull pale indigo, to dark plumbeous blue.

A nestling male measured:—

Length, 6·25; expanse, 11·0; tail from vent, 0·7; wing, 3·3; tarsus, 1·75; bill from gape, 0·75. Weight, 2·5 ozs.

The bill was pale horny; irides pale brown; eyelids grey brown.

THE PLATE, though carefully drawn, seems to have been taken from a faded specimen, and conveys no adequate idea of the marvellous depth and richness of the tints of the male's plumage. The bill is wrongly coloured, as are the claws, and the tint of the facial skin is too pale altogether. The plate is wrongly lettered.

As for the nondescript on the right, supposed to be a female, it reminds one of an amateur's daguerreotype portrait in the early days of photography, and as the hen could never be identified by it, I will give a description of her:—

The female wants the crest and the elongated tail feathers of the male, and has the whole top and back of the head, including the somewhat elongated bristly feathers of the lower part of the occiput and nape, and the back of the neck, speckled and narrowly barred greyish, or sometimes fulvous white and blackish dusky; the chin and throat and sides of the head and front of the neck, as in the male, bare or nearly so, with sparse white hair-like feathers; the base of the neck all round deep ferruginous, altogether unmarked, or a little freckled and marked with zig-zag black lines; breast and upper abdomen ferruginous, more or less orange, and becoming yellower on the abdomen, everywhere extremely closely vermicellated with zig-zaggy black lines; lower abdomen, tibial plumes, and flanks, a dusky greyish brown very finely, and on the lower abdomen and vent obsoletely, vermicellated with pale reddish brown; lower tail-coverts dark brown, finely speckled and vermicellated with pale rusty; winglet and primaries deep chestnut, irregularly variegated with black lines and spots; upper back like the breast, but the black markings rather more preponderant; secondaries, tertiaries, and wing-coverts black, comparatively

coarsely banded or variegated with bright buff bands, pretty uniform in breadth, but varying altogether in length and shape, sometimes reduced to mere spots, sometimes assuming most complicated hieroglyphic forms; the whole of the middle and lower back, rump, and upper tail-coverts black, banded with irregular freckly speckly spotted bars, varying in different specimens from deep ferruginous buff to almost buffy white; the markings at the upper edge of each of these bands being coarse and sparse, and growing fine and speckly towards the lower edge; tail and longest upper tail-coverts irregularly, but closely, marked with ferruginous buff or dull ferruginous.

It may be useful to describe the nestlings, which we have not been able to introduce into the plate.

The general colour is a brownish chestnut; the crown, nape, and interscapulary region obsoletely freckled with deep brown; the back and rump are black, with a broad conspicuous pale yellow stripe on either side of the back bone; the wings are brown; the larger coverts each with a rufous spot or imperfect subterminal bar; the quills tipped with the same dull rufous, and mottled with it on their outer webs; the chin and upper part of the throat are reddish albescent; the breast and front and sides of the neck are brownish chestnut, slightly paler on the interscapulary region. The rest of the lower parts browner and paler.

ONE OTHER species of the genus, *Argus grayi*, is known from Borneo, and there are two other supposed species, *A. ocellatus* and *A. bipunctatus*, described from a few feathers, of which nothing absolutely is, I believe, yet known.

1/3

POLYPLECTRON TIBETANUM.

THE GREY PEACOCK-PHEASANT.

Polyplectrum thibetanum, *Gmelin.*

Vernacular Names.—[Doungkulla, *Arakan* and *Pegu ;* Shuay dong, *Tennasserim ;* Munnowur, Deyodahuk, *Assam ;* Deo-durug, Deo-dirrik, *Garo Hills ;* Paisa-walla Majur, (Coolee jargon) *Tea gardens, Cachar.*]

IT is in the dense hill forests of the Indo-Burmese region that the Grey Peacock-Pheasant has its home.

Its furthest limits northwards and westwards, so far as I yet know, are the Baxa Duárs and the outer slopes of the Bhutánese Himalayas. Eastwards it is far from rare, in suitable localities in the Eastern Duárs, the northern portions of Goálpára, Kámrúp, and Darrang, and possibly, but I have no certain information on the subject, further east. South of the Brahmaputra it occurs in the Gáro, Khásiá, and Nága Hills, in Sylhet, Cachar, Hill Tipperah, Chittagong, Arakan, Pegu and Tenasserim, as far south as Tavoy, and perhaps some distance further, but not, according to our present information, so far down as Mergui town.

Outside our limits, we know that it occurs in Independent Burma and Western Siam, but its eastern limit, like that of the Burmese Pea-Fowl, has yet to be defined.

THIS SPECIES occurs at very varying elevations ; I have received it from places in Cachar and Sylhet, and from the base of Nwalebo in Tenasserim, from localities little above sea level, and again Davison obtained it almost at the summit of Mooleyit, at quite 6,000 feet elevation.

But though it occurs right down on the plains, it is so far a Hill Pheasant, that it chiefly affects hills and their immediate neighbourhood, and is never found in any considerable numbers at any great distance from these.

In Tenasserim we have usually found it singly or in little parties, very shy and keeping to the densest portions of the forest. Without dogs it is almost impossible to flush it, as it much prefers running to flying. It is easy, however, to find if any are in the jungle you are searching, as, on a gun being fired, every male that is within hearing at once begins to call. Their note is a long-drawn, harsh, somewhat bark-like, *qua-qua-qua*, often repeated.

So far as we know, it never, in Tenasserim, wanders out of the forests into the fields or other opener spaces to feed, as so many other Pheasants and Jungle Fowls do.

Our Tenasserim specimens proved to have fed upon ants and other insects, and on hard seeds.

As far as I can judge, the Tenasserim, Cachar, and Baxa Duár birds all belong to the same species, but it is necessary to note that Mr. Gray considered that there were three recognizable forms, distinguishable primarily by the shape, size, and colour of the ocelli or eye spots on the tail, back, and wings. I can at present discover no differences of this kind in my rather large series, that are not manifestly individual variations, but it is not impossible that the Assamese, Upper Burmese, and Siamese specimens may prove to differ somewhat.

I know so little of this bird that I have asked friends who know more for some little information in regard to it, and writing from North-east Cachar, Mr. Inglis remarks :—

" Although anything but rare here, this bird is but seldom seen, owing to its shy and retiring habits. It affects thick jungle with an open bottom, and it is especially fond of hilly lands where bamboos and young trees predominate.

" About the beginning of the year, the male begins to call in the early morning and late in the afternoon ; perched on the bough of a tree, or on the top of a stump, about eight or ten feet from the ground, he emits his loud call-note about every half minute. This call is often kept up for an hour or two at a time, and can be heard on a quiet morning a very long way off. Then is the time to stalk him, but it requires a large amount of patience and perseverance to do it successfully, as you have only the sound to guide you, and after approaching within about one hundred yards of your game, it is unsafe to proceed except during the calls ; thus you can only advance a few yards per minute.

" The call is very deceiving. I have often imagined that I was within shot of the bird, when it was really still a long way off.

" When you get up to the bird, and are sharp sighted enough to see him before he sees you, the only plan is to take a regular pot shot. Your chances are few indeed if you wait hoping to take him on the wing, as he has a detestable habit of dropping to the ground like a stone, and relying for escape on his heels.

" I have never shot more than two in a morning, and even then I thought myself in luck. To obtain a shot at all, entails rather hard work, and from the slow manner in which you advance you generally become only too well acquainted with all the leeches and mosquitos in the neighbourhood.

" I have sometimes shot this Pheasant, as well as the Black-breasted Kalij, Red-legged Wood Partridge, and Common Jungle

Fowl, by hunting the forest with a couple of dogs (mongrels). When any one of these birds is started, the dogs invariably give chase, and soon '*tree*' the fugitive. The dogs generally continue giving tongue, until one reaches the tree. This must seem a very unsportsman-like way of shooting Pheasants, but any one acquainted with Cachar jungles will allow that it is about the only way to get a shot at any game birds, excepting Duck, Snipe, and Quail.

"The Kookies snare numbers of the *Polyplectrum* on their '*jhooms*,' or cultivation clearings, inside the forests. The snare consists generally of a sapling, or branch of a tree, bent towards the ground; one end of a piece of string is fastened to the sapling, and on the other end is a noose; the noose is spread round a small hole in the earth; the trap itself is a simple contrivance of a few split pieces of bamboo; the bait is a small red berry of which the bird is very fond; the berry is firmly attached to the trap, and the bird pecking at the berry releases the catch, the sapling flies up, and the bird is noosed by the neck or feet, or sometimes both. If the bird is to be taken alive, a very supple sapling is chosen, so that the bird is not suspended, but if the bird is to be eaten at once, a stiff sapling is selected, so that it is lifted right off its legs and hung up high enough to be well out of the reach of cats, jackals, and other vermin.

"Females are not so often snared as males. The hill people call them 'Mohr,' or Peacock, and do not seem to know when they breed or where. I have offered rewards for a nest, but without success. I have not seen a bird between June and November; perhaps they retire into quieter jungles when breeding."

Mr. R. A. Clark, who was in the Mynadhar garden below Tipai Mukh in Cachar, and has shot numbers of this species, gives me the following information:—

"The Peacock-Pheasant is very common in North-Eastern Cachar, where it is found in dense bamboo jungle, on the sides of ravines, and on the tops of the low ranges of hills wherever there are *Jámun* trees, as well as on the banks of the river 'Barak,' wherever it is well wooded. On the rocky faces of the 'Barak' banks there is a tree, which, during the rainy season, is partially submerged, but in the cold weather bears a fruit with seeds like those of a 'chilli.' On these the birds feed greedily in the early morning and towards sunset; insects and worms, with this fruit, form their chief food, but I have on one occasion found small land shells and pebbles in the stomach of an adult male.

"These birds may be heard in the early morning and at sunset calling, and then the male is generally to be found perched on some branch, only a few feet off the ground. The call is ha-ha-ha-ha, something like a laugh, and can be heard from a good distance; the female's note I have never heard.

"From November to April these birds are found all over the well-wooded parts of the district; and during the rainy season they retire to the dense forests and bamboo jungle to breed, and at this season the call is never heard.

"I have shot dozens of this bird, some of which had two and three spurs, but in no case did I ever see more than four on one leg, and one peculiarity is, that they hardly ever have the same number of spurs on each leg. The Kookies have an idea that an additional spur grows every year, but during the five years' experience I had of them, I never saw more than the number mentioned above. The females have a corn on each leg where the spur is in the male.

"These birds go about in pairs generally, but on one occasion, in December, while riding through a forest pathway, I came across a party of four, one male and three females, the latter easily distinguishable by their smaller size and duller colours.

"As a rule, these Pheasants are very shy and terrible runners and skulks, and without a good dog it is impossible to secure a winged bird. They are delicious eating. The Kookies and Danghar coolies in the Cachar tea gardens know this bird by the name of "Paisa-wálla-majur." The Kookies are very ingenious in their methods of trapping birds; the common spring-trap, so well known at home, is universally used, and for securing birds on their nests, where these are on the ground, the grass conical basket, mentioned further on, is adopted, the green ulu grass being used. The spring-traps are baited with a crimson seed, which is obtained from a forest tree."

Darling reports that he "saw a great number of this Pheasant in the Thowngyah Hills (Tenasserim)," and not unfrequently in company with the Lineated Pheasant.

"I generally noticed them," he says, "in parties of two, three, or four, but once coming round a sharp corner, I stumbled upon eight of them, employed in scratching up a lot of fresh elephant's dung.

"I only managed to procure a pair. The male I shot. Prowling about the jungle in the morning for birds, I saw a dark object scuttling through the bushes, and fired and picked up, to my great delight, a fine male. The hen, I snared, and in rather a strange way. I found three holes of the porcupine rat (of which I got two specimens) communicating with one another; the entrance to one of these holes was nearly 3 feet in diameter and some 4 feet in depth, decreasing, as the hole deepened horizontally into the hill side, to about 8 inches. I set a slip noose with a springer in the small part of the hole. On looking next morning, instead of, as I expected, finding the rat, there were only a number of the feathers of a male of this species. I set the trap again, and that evening got nothing; next morning I found a hen hanging by her legs in the trap.

"They feed in the thick clumps, on seeds, insects and shells, go about in a perfectly noiseless manner, and are very hard to flush, disappearing like magic if disturbed. At the report of a gun they cry out *qua*, but this is the only call I have heard them utter."

Col. Williamson says: "This species, though not often seen, and only to be shot with the aid of dogs, who speedily '*tree*' it, is found all over the Gáro Hills, where it is a permanent resident. I have shot it on the Tura Range of Hills, which attain an elevation of 4,600 feet."

I HAVE as yet entirely failed to obtain the eggs of this species, but to judge from experience obtained in captivity, the females produce two or three broods in a year, and lay only two eggs to a sitting. In a wild state they probably lay more eggs, and only once a year. The eggs laid in captivity are described as "peculiarly delicate in form and colour, assimilating very closely to those of the Golden Pheasant, of a creamy or buffy white, and measuring 2 inches in length by 1·44 in breadth."

Mr. Clarke, whom I have already quoted, says:—

"I once had the good fortune to find a nest containing hard-set eggs of this species in the month of May, the exact date I forget. I took these and set them under a domestic hen, and in a week's time one egg hatched, the others went bad.

"The nest was placed at the foot of a large bush, which stood amongst 'sone' grass and small cane jungle, on undulating ground. The female flew off the nest on our approach, when the Kookie shikári who was with me, said he would catch the bird. He made a cone-shaped basket of grass, put it over the nest and retired with me to a short distance. After about 15 minutes we approached stealthily and threw a cloth over the basket, securing the bird which had returned to the nest while we were away, and lifting the edge of the cone had crept inside.

"The eggs were of a *café au lait* colour; the nest was circular, about 9 inches in diameter and 3 inches in depth, made of twigs and leaves roughly put together, with an apology of a lining of the bird's own feathers, and possessed sufficient cohesion to permit of its removal, eggs and all, to my bungalow. The young one that was hatched was covered with greyish down and looked very much like a fowl chicken. Notwithstanding all my care, it died in a week's time."

We are told that when the young of this species were first hatched in the Zoological Gardens, a Bantam hen was employed as a foster mother, and that the chicks *would* follow close behind her, never coming in front to take food, so that, in scratching the ground, she frequently struck them with her feet. The reason for the young keeping in her rear was not understood until, on a subsequent occasion, two chicks were reared by a

hen *P. tibetanum*, when it was observed that they always kept in the same manner close behind the mother, who held her tail widely spread, thus completely covering them ; and there they continually remained out of sight, only running forward when called by the hen to pick up some food she had found, and then immediately retreating to their shelter.

THE FOLLOWING are the dimensions and colours of the soft parts recorded in the flesh from two fine adult males and females :—

Males.—Length, 24·5 to 26·0; expanse, 25·25 to 27·0; tail from vent, 12·6 to 14·2 ; wing, 8·2 to 8·6 ; tarsus, 2·9 to 3·0 ; bill from gape, 1·3 to 1·4. Weight, 1·5 to 1·75 lbs.

Females.—Length, 19·0; expanse, 22·5 to 23·6; tail, 8·3 ; wing, 7·1 to 7·6; tarsus, 2·5 to 2·75; bill from gape, 1·25. Weight, 14 ozs. to 1 lb.

In one male the legs and feet were blackish ; the claws black ; upper mandible and tip of lower mandible black ; rest of lower mandible and facial skin pale fleshy yellow ; irides white. The females had the legs and feet very dark plumbeous ; upper mandible dark horny brown, paler on cere ; lower mandible pale brown ; irides deep grey ; facial skin pale dingy fleshy yellow.

THE PLATE gives a fair idea of the male, but it seems necessary to give a description of the other sex, the diminutive portrait of which might stand for any thing, and is more like the Malayan Peacock-Pheasant than the present species.

The female is a much smaller bird than the male, and has less of a brush crest; the chin and throat greyish white ; the whole of the rest of the head and neck all round rather dark brown, very finely and obsoletely barred with a lighter and more fulvous shade of brown, and decidedly shaded greyer on the forehead and crown; many or most of the feathers of the lower half of the neck, especially in the front and at the sides, with minute white shaft specks or spots ; the primaries and their greater coverts plain glossy rather pale brown, of a peculiar tinge, approaching somewhat to liver brown ; the whole of the rest of the visible portions of the closed wings and scapulars, and interscapulary region, hair brown ; the feathers with somewhat widely separated irregular narrow speckly transverse bars of pale buff, in places ferruginous buff; the feathers are margined at the tips with a similar band of somewhat coalescing speckles and spots which are white, or nearly so, in most specimens ; inside this the tip of the feather is black or blackish, with, in many cases, a faint dull purplish gloss in parts. This again is bounded above by an imperfect transverse speckly bar, which, like that of the tip, is white or nearly so. The rest of the back, rump, and upper tail-coverts brown, excessively minutely pencilled and stippled with buffy brown ; most of the feathers more or less white shafted

and with a tiny white spot on the shaft just at the tip; the longer upper tail-coverts and tail are the same hair brown, with numerous widely separated, irregular imperfect transverse bands of spots and specks, whiter on the tips of the longer tail-coverts, buffy elsewhere; each of the tail-feathers has near the tip a small imperfect dusky metallic green ocellum, surrounded by an ill-defined blackish band and very inconspicuous. In some specimens the ocelli are more, in others less, developed, but they are always very inconspicuous as compared with those of the male. Sometimes there are, I believe, traces of ocelli on the upper tail-coverts, but there are none in the specimens now before me; the breast and greater part of the abdomen hair brown, minutely speckled, chiefly towards the margins of the feathers, with buffy dots and zig-zags; vent, tibial plumes, and lower tail-coverts plain brown; the latter, however, a little speckled with white towards their tips. The female of course has no spurs.

DURING THE Lushai Expedition, the tail-feathers of a male *Polyplectrum* were picked up in a village, which I at once saw could not have belonged to either the Grey or Malay Peacock-Pheasants. In the former species the freckling spots are greyish white on a greyish brown ground; in the latter they are hair brown on a buff ground, and much larger than in the former.

In the tail feathers, above alluded to, the spots are about the same size as in the Grey Peacock-Pheasant, but are less closely set and are pale buff on a hair brown ground. The ocelli of the central-feathers are more elongated ovals than in *tibetanum* and emerald green.

I have since satisfied myself that these feathers must have belonged to another species hitherto known only from Cochin China, but probably extending into Siam, Germain's Peacock-Pheasant (*P. germaini*, Elliot.)

This bird *may* extend into the Lushai country, or the feathers may have been brought there; there is no saying; I have been able to learn nothing further since this one set of tail-feathers was obtained, but still I think it advisable to give a very brief description of it.

It is most like *P. tibetanum*, but it has no white throat, and the bare orbital skin is bright crimson and not pale fleshy pink or fleshy yellow as in *tibetanum*.

"It is readily distinguished," says Elliot, "from all the members of this genus, and may be described as follows:—General colour blackish brown, irregularly spotted with light brown; head and back part of the neck black, each feather barred with white; back, wings, and tail-coverts with metallic spots, in some lights of a dark lustrous green, in others of a rich purple; primaries dark brown; upper mandible black; lower horn-colour; feet black."

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POLYPLECTRON BICALCARATUM

THE MALAYAN PEACOCK-PHEASANT.

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Polyplectrum bicalcaratum, *Linné.*

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Vernacular Names.—[Quou-chermin, (*Malay.*)]

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ALTHOUGH we have figured this species, it having been on more than one occasion sent from Mergui, I entertain grave doubts whether it really occurs within our limits. The bird, however, may yet prove to occur in the higher hills of Southern Tenasserim, inland from the now ruined city of that name, which have been variously estimated to rise to elevations of from five to eight thousand feet, but these hills roadless, uninhabited, and almost impenetrable, remain as yet unexplored.

From almost the southern boundary of Tenasserim to the extreme south of the Malay Peninsula, it certainly occurs, and it has been recorded in a doubtful fashion by Raffles from Sumatra, but I think its occurrence there needs confirmation.

ABSOLUTELY NOTHING is known of its habits or nidification, nor have we any measurements recorded in the flesh.

A MALE measures in the skin about 20·5 inches in length; wing to the end of the longest primary, 8 inches; elongated tertiaries projecting about 0·5 further; tail about 11·0; tarsus, 2·9, with two conspicuous spurs on the back thereof, each nearly 0·5 long; mid-toe and claw, 1·8; bill, straight from frontal bone to tip, 1·1.

A *female* similarly measures—

Length, 18·0; wing, 7·0; the tertiaries in this sex falling short of the longest primaries; tail, 9·0; tarsus, which has no spurs, 2·4; mid-toe and claw, 1·6; bill at front, 1·0.

The legs and feet are said to be dusky; the upper mandible blackish; the lower horny; the orbital space red.

Some males have only one, and some three instead of two spurs, on one or both legs.

THE PLATE gives a good idea of the bird. I cannot say whether the soft parts are correctly coloured.

BESIDES THE three species already mentioned, two others, usually assigned to this genus, *P. emphanum*, of Borneo, and the very aberrant *P. chalcurum*, of Sumatra, are known.

(Slip to face page 114.*)*

The *Polyplectrum* referred to as from Borneo, should stand as *P. napoleonis.* Its supposed habitat of Borneo has not been verified, but it has recently been found in Palawan Island of the Philippines. Palawan is a long island, running down towards the northernmost point of Borneo, from which it is only separated by the Straits of Balabac, which are again bridged over with smaller islands, so that there is nowhere, probably, a clear break of more than 30 miles, if as much. It seems very possible, therefore, that this species may, as was originally stated, extend to Borneo.

F.Waller. Chromo Lith. 18. Hatton Garden. London.

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CROSSOPTILON TIBETANUM

HODGSON'S EARED-PHEASANT.

Crossoptilum tibetanum, *Hodgson.*

Vernacular Names.—[Bhote Dafé, *Nepal.*]

THIS is another species which could hardly claim to be included in the Game Birds of India. Hodgson obtained the unique specimen of this striking bird (which now graces the national collection) in Nepal it is true, but it had been brought in by an envoy who had been to Pekin ; he does not appear to have been questioned as to where he met with the species, and it is impossible to say now where he did get it.*

I however wished to reproduce exactly (as I have done) Mr. Hodgson's original drawing, taken from the fresh bird (so unlike the lovely *fancy* plate in Grey's Genera), and his full original description, now only to be met with in an old volume of the Journal of the Asiatic Society of Bengal, long since out of print.

It has been surmised that this species is identical with that discovered by David, at Moupin, and named *Crossoptilum drouyni* by Verreaux, but all the specimens of this latter as yet obtained consistently differ in some important particulars from Hodgson's type.

IT MAY be well to note that in all these Eared-Pheasants, and there are at least two other known species *(C. mantchuricum* and *auritum)*, the females only differ from the males in wanting spurs.

Mr. Hodgson's description is as follows :—

" The length, from the tip of the bill to the tip of the tail, is from 38 to 40 inches, of which the bill is 1·62, and the tail 19 to 20 inches.

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* But note what Colonel Tickell remarked in the *Field*, March 3, 1866, p. 170 :— " Next in order to the Moonal should come the Crossoptilon, or Snow Pheasant. of which two species have been discovered, *C. auritum* and *C. tibetanum*. They are fine stately birds, with a pure white plumage, and large satin green tails ; but my knowledge of them is limited to the inspection of a stuffed skin of *C. tibetanum*, in the possession of some Bhutias who were passing through Nepal on their way to the plains in 1840." If this is to be relied on, the birds may come from nearer Nepal than has generally been surmised.

"A closed wing measures 12·5 inches; the tarsus, 4·12; and the central-toe, 2·62. The bill has the same length, whether taken from the gape or from the front, and is three-eighths of an inch shorter than the head, the latter being two inches complete. The bill is very strong, with the general characters of that of *Lophophorus*, the tomial edge of the upper mandible being even more scarped, and furnished with a small tooth-like festoon; its base is nude. The head and throat are clad in feathers, and simple, but the entire cheeks, from nostril to occiput, are void of plumes, being occupied by the typical red and papillated skin of the Pheasant tribe, and in all that extent of development, which more especially characterises the Indian Kaliches (*leucomelanus*), and the painted and Amherstian species of China. Like the true Pheasant (*colchicus*), our bird has no crest of any kind, though the feathers occupying the top of the head are of a peculiar kind, being short, velvety, thick set, erect, with their slightly discomposed and square points recurved a little to the front.

"The wings have no peculiarity; they are short, stiff, bowed, and rounded as usual, the sixth feather being the longest. The very ample tail is most remarkable for the breadth of the plumes. Its length is moderate, nor is there any of the extra elongation and narrowing of the central feathers which characterise the typical Pheasants. There are 18 caudal plumes, regularly and considerably graduated throughout, and the general form of the tail is broadly convex, without any symptom of the Galline compression and curve. The legs and feet are well adapted for rapid movement on the ground, and have a form and proportion very similar to those of *leucomelanus* and *satyra*. The tarsi are nude, and biscaled before and behind, but the hinder scales are smaller than the fore ones. The sides of the tarsi are papillo-reticulate. The spur is sharp and curved. The lateral toes are equal, the central long, and the hind short and raised, as usual. The nails are long, and possess but little curve.

"It remains only to notice the plumage of the bird, which constitutes, indeed, its most remarkable feature. The plumage, then, upon the whole body is very ample, (but not at all pointed,) unglossed, and wholly dishevelled, so as to remind one of the Struthious family.

"It is distinguished amongst all its congeners by its ample fringe-like plumage, the dishevelled quality of which is communicated even to the central tail-feathers, the very broad and equal webs of which are quite separated, and curve outwards, the sides, besides, being adorned by a fine gloss.

"The general colour of our bird is bluish-hoary, paler and tinted yellow on the lower surface; crown of the head, black and velvety; great alar and caudal plumes dusky or black, more or less glossed with changeable blue, especially the tail-feathers;

legs and cheek-pieces intense sanguine ; bill dull ochreous red ; iris brown."

Mr. Hodgson's original notes, recorded with his own hand on the reverse of the plate that we have copied, differ in some particulars, and I reproduce them below.

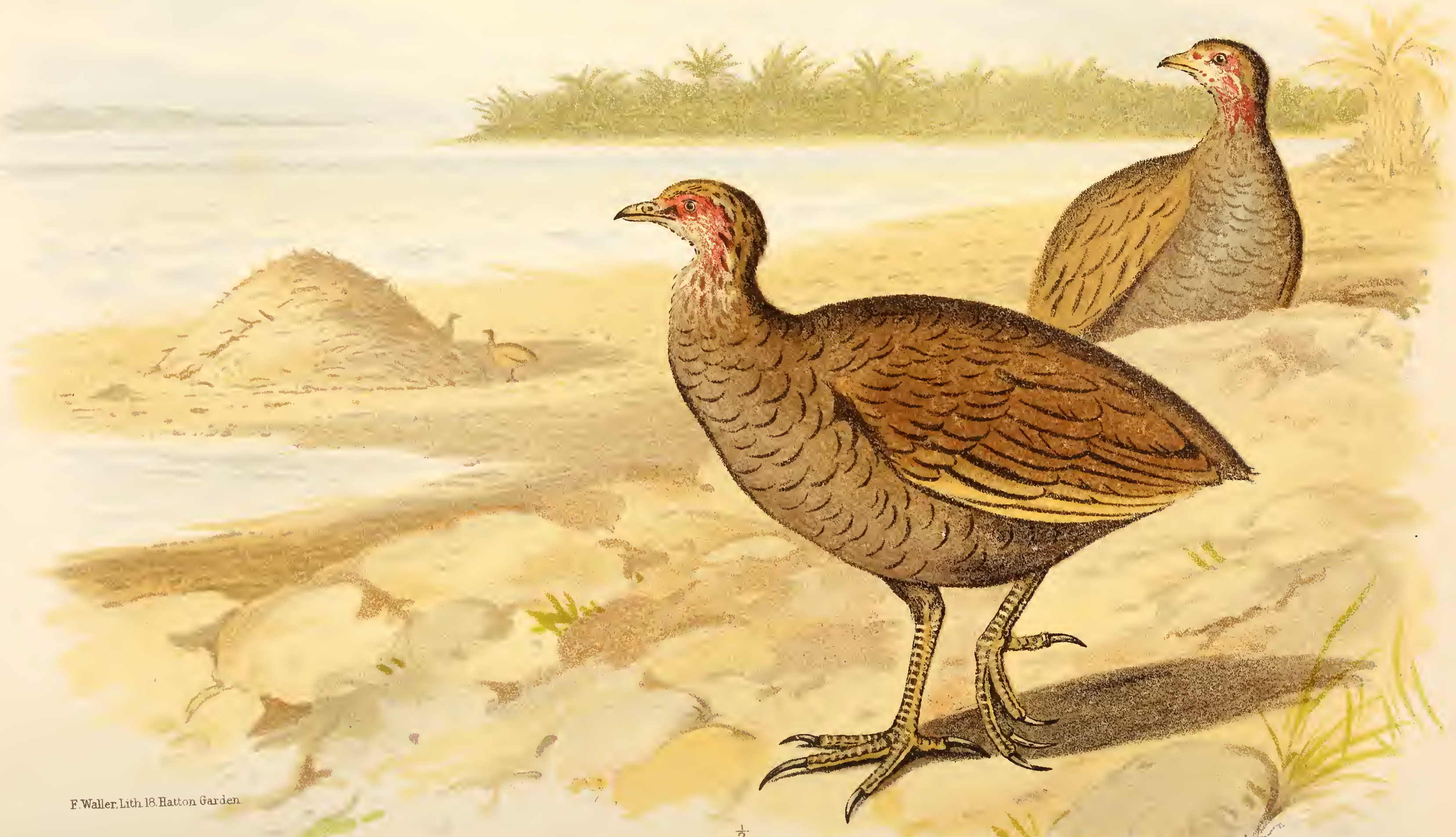
Neither in figure, nor description, nor notes, is any indication of, or allusion to, the ear-tufts, so conspicuous in the other species of this genus, to be detected, and considering that Mr. Hodgson received the bird apparently in the flesh, this is remarkable if this species really possesses these tufts. If it does not, all idea of its identity with any other known species may be at once dismissed.

These are Mr. Hodgson's notes. I have italicised figures and remarks which differ from, or are supplementary to, those of the printed description :—

"Length, 38 ; *bill to gape, 1·75* ; tail, 19·5 ; wing, 12·5 ; *tarsi to sole, 3·87* ; *centre-toe and nail, 3·31* ; *hind do., 1·25*.

"*Bill to gape equal to head,* strong, broadly convexed, but inclining to pent form, in the huge overlaying upper mandible whose tomial edge has an accipitrine festoon, a little dentate even ; cere, nude, medial ; *nares, basal, lateral, shaded above by scale* ; eye piece large, as in *Euplocamus* ; wings, medial rounded, bowed ; 6th quill longest, *1st, 2·12 inch less, rest graduated in diminishing series* ; tail ample, broad convex, inclined to arcuate form ; *20 plumes*, which are equally graduated throughout, and have broad open webs and *obtuse round ends, the uppermost, or mid plumes hiding all the rest* ; *graduation to 8·5 inches in extremes* ; legs and feet like *Euplocamus* ; tarsi nude, high, biscaled afore, also behind, but smaller, reticulate to sides ; acutely spurred ; toes medial ; *acropodia scaled* ; laterals equal ; *nails, obtuse.*"

THE PLATE is a very exact and faithful copy of the original done by Miss Herbert.



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MEGAPODIUS NICOBARICUS.

THE NICOBAR MEGAPODE.

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Megapodius nicobariensis, *Blyth.*

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Vernacular Names.—[Grouse, Peafowl, Pheasants ! (British barbarians) *Camorta.*]

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THE Nicobar Megapode is only certainly known to occur in the central and southern divisions of the group of islands whence they derive their name.

We saw and shot them on every single island except the three northernmost—Chowra, Batty Malve, and Car Nicobar.

In no portion of the Andaman group have they yet been traced, but at Table Island, at the north of the Great Coco, there was some reason to think that they must have occurred, though we could find none of them. In the first place the lighthouse-keeper, a most intelligent European, described to us brown hen-like birds with large legs and feet that he had occasionally shot on the island. In the second place, we found some little hillocks that might have been old mounds of this species.

It is not unlikely that this species extends to the various small islets of the north-west end of Sumatra, but this remains to be proved.

THE MEGAPODE never wanders far from the sea-shore, and throughout the day it keeps in thickish jungle, a hundred yards or so above high water mark. It never, so far as I observed, emerged on to the open grass hills that form so conspicuous a feature in so many of the Nicobars, but throughout the day hugged the belt of more or less dense jungle that in most places, along the whole coast line, supervenes abruptly on the white coral beach. At dusk, during moonlight nights, and in the early dawn, glimpses may be caught of them running about on the shore or even at the very waters' edge, but during daylight they skulk in the jungle.

They are to be met with in pairs, coveys, and flocks of from thirty to fifty. They run with great rapidity and rise unwillingly, running and flying just like jungle hens. They often call to each other, and when a party has been surprised and dispersed, they keep on talking to each other incessantly, half a dozen cackling at the same time. The note is not unlike the chuck-

ling of a hen that has recently laid an egg, and is anxious to publish the stupendous fact in nature's pages ; it may be syllabled in a variety of ways, but several of us agreed that on the whole kŭk-ă-kŭk-kŭk ! most nearly represented their chuckling cackling call.

The stomachs of all we examined contained tiny land shells (sometimes with the animals not yet dead), larvæ of insects, dissolved matter, apparently vegetable, and minute fragments and particles of quartz or other hard rocks.

When by any fortunate chance you can get them up, they are very easy to shoot. They are most abundant where the soil is light and sandy, and the ground cover at the bases of the magnificent trees that overshadow one from above, is therefore comparatively penetrable, and in such localities, with a few good dogs, they would afford very pretty shooting.

As game they are unsurpassed. The flesh, very white, very sweet and juicy, loaded with fat, is delicious, a sort of *juste milieu* between that of a fat Norfolk Turkey and a fat Norfolk Pheasant.

The eggs, too, are quite equal, if not superior, to those of the Pea-Fowl, and to my mind higher commendation cannot be given.

BUT IT is in regard to their nidification that these birds possess the highest interest. Moderate-sized birds as they are, they gradually manage to accumulate tumuli, that would not have done discredit to the final resting-place of some ancient British hero, and in these they bury their eggs and leave them to be hatched by the heat evolved, as I believe, by fermentation, in the interior of these mounds.

These mounds are *never*, as our artist has by mistake represented one, on the bare sea-shore ; they are always at least just completely inside the belt of jungle that fringes the high water mark, and they are never so high in proportion to their breadth as he has depicted.

Both Davison and myself took great pains to learn all we could about the nidification of these, in this respect, queer birds, and I will quote notes of ours that we recorded at the time.

He says : "I have seen a great many mounds of this bird. Usually they are placed close to the shore, but on Bompoka and on Katchall I saw two mounds some distance inland in the forest. They were composed of dried leaves, sticks, &c., mixed with earth, and were very small, compared with others near the sea-coast, not being above three feet high and about twelve or fourteen feet in circumference ; those built near the coast are composed chiefly of sand mixed with rubbish, and vary very much in size, but average about five feet high and thirty feet in circumference; but I met with one exceptionally large one on the Island of Trinkut, which must have been at least eight feet high and quite sixty feet in circumference. It was apparently

a very old one, for from near its centre grew a tree about six inches in diameter, whose roots penetrated the mound in all directions to within a foot of its summit, some of them being nearly as thick as a man's wrist. I had this mound dug away almost to the level of the surrounding land, but only got three eggs from it, one quite fresh, and two in which the chicks were somewhat developed.

"Off this mound I shot a Megapode, which had evidently only just laid an egg. I dissected it, and from a careful examination it would seem that the eggs are laid at long intervals apart, for the largest egg in the ovary was only about the size of a large pea, and the next in size about as big as a small pea. These mounds are also used by reptiles, for out of one I dug, besides the Megapode's eggs, about a dozen eggs of some large lizard.

"I made careful enquiries among the natives about these birds, and from them I learnt that they usually get four or five eggs from a mound, but sometimes they get as many as ten; they all assert that only one pair of birds are concerned in the making of a mound, and that they only work at night. When newly made, the mounds (so I was informed) are small, but are gradually enlarged by the birds. The natives never dig a mound away, but they probe it with a stick or with the end of their *daos*, and when they find a spot where the stick sinks in easily, they scoop out the sand with their hands, generally, though not always, filling in the holes again after they have abstracted the eggs. The Nicobarese and the Malay and Burmese traders take numbers of these eggs, which they generally cook by placing them in hot ashes; but they also sometimes boil them quite hard, and they do not seem to be very particular whether the egg is fresh or contains a chicken in a more or less advanced stage of development. The Nicobarese, at any rate, appear to relish a boiled or roasted chicken out of the egg quite as much as they do a fresh egg.

"The eggs are usually buried from $3\frac{1}{2}$ to 4 feet deep, and how the young manage to extricate themselves from the superincumbent mass of soil and rubbish, seems a mystery. I could not obtain any information from natives on this point, but most probably they are assisted by their parents, if not entirely freed by them, for these latter, so the natives affirm, are always to be found in the vicinity of the mounds where their eggs are deposited.

"The surface soil of the mounds only is dry; at about a foot from the surface, the sand feels slightly damp and cold, but as the depth increases the sand gets damper but at the same time increases in warmth."

I, myself, saw a considerable number of these mounds, chiefly at Galatea Bay, and there I examined some of them very minutely. These were situated just inside the dense jungle which commences at springtide high-water mark. It appeared

to me that the birds first collected a heap of leaves, cocoanuts, and other vegetable matter, and then scraped together sand which they threw over the heap, so as not only to fill up all interstices, but to cover everything over with about a foot of pure sand,—I say sand, but this term is calculated to mislead, because it does not contain much silex, but consists mainly of finely triturated coral and shells. After a certain period, whether yearly or not I cannot of course say, the birds scrape away the covering sand-layer from about the upper three-fourths of the mound, cover the whole of it over again with vegetable matter, and then cover the whole in again with the sand. In the large mound, an old one, into which I carefully cut a narrow section from centre to margin, this arrangement was very perceptible; in it I thought I could trace, by the more or less wedge-shaped portions of pure sand along the base (the remnants of successive outer coverings of sand, the basal portions of which have never been removed), ten or perhaps eleven successive renovations of the mound; even the central portion was perfectly cool. The vegetable matter had in a great measure disappeared, leaving only the hard woody portions behind, but showing where it had been by the discolouration of the sand. The decay of the vegetable matter, and the bird's habit (as I judge from appearances) of not removing the basal portion of the sandy covering at each renovation, sufficiently explain why the mounds increase so much more in radius than in height.

A smaller mound, one as I take it still in use, though I could find no eggs in it, contained a much greater amount of vegetable matter, and was sensibly warm inside. I could make no section of it, as it was too full of imperfectly decayed vegetation. I believe that the bird depends for the hatching of its eggs solely on the warmth generated by chemical action. The succulent decaying vegetation, constant moisture, and finely triturated lime, all combined in a huge heap, will account for a considerable degree of artificial heat.

I am by no means satisfied that only one pair of birds use the same mound; on the contrary, the Nicobarese I had with me that day explained, as I understood, that, though one pair begin the mound, they and all their progeny keep on using and adding to it for years; and they told us that they had, during the previous month, taken at one time some twenty eggs out of one and the same mound, which also they took us to see, and which was perhaps five feet high and sixteen or eighteen feet in diameter, and which was the freshest-looking I had seen.

The eggs are excessively elongated ovals, enormously large for the size of the bird. They vary a great deal in size, and a good deal in shape; all are much elongated, but some are more like Turtles' eggs than those of a bird. When first laid, they are of a uniform ruddy pink, as we know from having obtained

one before the bird had time even to bury it; after being buried, so long as the egg remains quite fresh, it continues a pale pink, but as the chicken develops within, the egg becomes a buffy stone colour, and when near about hatching, it is a very pale yellowish brown. The whole colouring matter is contained in an excessively thin chalky flake, which is easily scraped off, leaving a pure white chalky shell below. This outer coloured coat seems to have a great tendency to flake off in spots, specks, and even large blotches, as the chicken is developed within. Quite fresh-laid eggs rarely exhibit any white marks of any kind, while those more or less approaching hatching (one cannot say incubated in this case) are invariably more or less mottled with white. Occasionally fairly fresh eggs are dug out, bearing along their entire length on one side two parallel white lines made apparently by the claws of the mother bird when scraping the sand over them. The eggs are always a little pointed towards one end, and some, especially the less cylindrical ones, are conspicuously so. The shell is entirely devoid of gloss, and the surface is everywhere roughened with innumerable minute pores, which occur equally in the exterior coloured flake and the white, somewhat less chalky, shell beneath.

In length the eggs vary from 3·01 to 3·4, and in breadth from 1·9 to 2·25; but the average of sixty-two eggs that I have carefully measured is 3·25 by 2·07.

THE FOLLOWING is a *résumé* of the dimensions of 15 specimens measured in the flesh. The birds vary a good deal in size, but this is probably due to age, and certainly not to sex, as some of the largest and some of the smallest birds belonged to each sex:—

Length, 14·5 to 17; expanse, 28 to 32·5; wing, 8 to 9·5; tail from vent, 2·75 to 3·5; tarsus, 2·6 to 2·75; bill from gape, 1·2 to 1·3; bill at front, 0·94 to 1·1; wings, when closed, reach from within one inch of, to quite the end of tail. In weight they vary from 1 lb. 5 ozs. to 2 lbs. 2 ozs.

Legs and feet; front of tarsus dark horny, in some greenish horny; scutæ often irregularly marked with lighter horny; front of toes darker horny than tarsus, darkening still more towards claws; claws dark horny above, lighter horny beneath, and tipped light horny; soles pale carneous, sometimes pale yellow; tibio-tarsal articulation, back and sides of tarsi, dull brick or litharge red; bill light greenish or yellowish horny, yellower along edge of mandibles; lores and whole orbital and aural region, and visible portions of the skin of the neck, showing through between the sparse feathers, varying from a light, somewhat dull, cherry red to a bright brick red; irides light brown or hazel brown.

THE PLATE is fairly good, but the legs and feet are, as usual, quite wrongly coloured, though Captain Marshall took home with him, for the artists in this and other cases, full and exact descriptions. The shade of the plumage varies much in different specimens; in some birds, as in the figure in the back ground, the lower surface is much greyer, and the upper surface paler and yellower than in others. In some, again, the tints are even darker than in the bird depicted in the foreground. The plate is wrongly lettered.

THE MEGAPODES, of which between twenty and thirty other species have been described, belong to the Islands of the Archipelago and of the Pacific, New Guinea, and Australia.

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LOPHOPHORUS IMPEYANUS.

THE MOONAL.

Lophophorus impeyanus, *Latham.*

Vernacular Names.—[Lont (*male*), Ham (*female*), Nil-mor, Jungli-mor, *Kashmir;* Manāl, Neel, (*male*), Kururi, Karari (*female*), *Kullu;* Moonal (*male*), Moonalee (*female*), Ghur-monal, Ruttia Cowan, Ratnal, Rat-kap, *Central Himalayas;* Datteya, *Thibet and Bhot Pergunnahs of Kumaun and Garhwál;* Dāngān, Dafai, Damphia, *Nepal;* Chamdong (Bhotia), Phodong-pho (Lepcha) *Sikhim.*]

FROM the western* borders of Kashmir to the more western portions, at any rate, of Bhután, the Moonal is found in suitable localities throughout the Himalayas. So far as is known it extends nowhere beyond these mountains.

WHAT IS essential to this species is elevation and forest. All our Pheasants in the Himalayas may, as Hodgson (I think) pointed out thirty or forty years ago, be roughly divided into three classes; firstly, those of the high mountains to which belong the Moonal, the Snow Cocks, the Blood Pheasant, and the Tragopans; secondly, those of the mid region, the Cheer, the Koklass, and the various Kalij Pheasants; and thirdly, the Jungle Fowl of the lower region.

And you must have vegetation and forest as well as considerable altitudes; it would be vain to seek the Moonal in the stony wildernesses of Lahoul and Spiti, or the desert steppes of Ladakh.

I have shot many Moonal in my time, and have seen a vast number more. There are few sights more striking, where birds are concerned, than that of a grand old cock shooting out horizontally from the hill-side just below one, glittering and flashing in the golden sunlight, a gigantic rainbow-tinted gem, and then dropping stone-like, with closed wings, into the abyss below. I could say a good deal about these glorious birds, but almost all that I or any one could say was said in his own inimitable style thirty years ago by my old friend Mr. Frederic Wilson, whose charming narrative remains a "joy for ever."

He says:—

"The Moonal is found on almost every hill of any elevation, from the first great ridge above the plains to the limits of

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* Biddulph says: "I have procured the Moonal from Chitral, where it is common."

forest, and in the interior it is the most abundant of our game birds. When the hills near Mussooree were first visited by Europeans, it was found to be common there, and a few may still be seen on the same ridge eastwards from Landour.

"In summer, when the rank vegetation which springs up in the forest renders it impossible to see many yards around, few are to be met with, except near the summits of the great ridges jutting from the snow, where morning and evening, when they come out to feed, they may be seen in the open glades of the forest and on the green slopes above. At that time no one would imagine they were half so numerous as they really are; but, as the cold season approaches, and the rank grass and herbage dies away, and they begin to collect together, the woods seem full of them, and in some places hundreds may be put up in a day's walk.

"In summer, the greater number of the males, and some of the females, ascend to near the limits of the forests where the hills attain a great elevation, and may often be seen on the grassy slopes a considerable distance above these limits.

"In autumn, they all descend into the forest, frequenting those parts where the ground is thickly covered with decayed leaves, under which they search for grubs; and they descend lower and lower as winter sets in and the ground becomes frozen or covered with snow. If the season be severe, and the ground covered to a great depth, they collect in the woods which face to the south or east, where the snow soon melts in the more exposed parts, or descend much lower down the hill, where it is not so deep, and thaws sufficiently to allow them to lay bare the earth under the bushes and in sheltered places. Many, particularly females and young birds, resort to the neighbourhood of the villages situated high up in the woods, and may often be seen in numbers in the fields. Still, in the severest weather, when fall after fall has covered the ground to a great depth in the higher forests, many remain there the whole winter; these are almost all males, and probably old birds.

"In spring all in the lower parts gradually ascend as the snow disappears.

"In the autumnal and winter months, numbers are generally collected together in the same quarter of the forest, though often so widely scattered that each bird appears to be alone. Sometimes a person may walk for a mile through a wood without seeing one, and suddenly come to some spot, where, within the compass of a few hundred yards, upwards of a score will get up in succession. At another time, or in another forest, they will be found dispersed over every part, one getting up here, another there, two or three further on, and so on, for miles.

"The females keep more together than the males; they also descend lower down the hills, and earlier and more gene-

rally leave the sheltered woods for exposed parts or the vicinity of the villages on the approach of winter. Both sexes are often found separately in considerable numbers. On the lower part or exposed side of the hill, scores of females and young birds may be met with, without a single old male; while higher up, or on the sheltered side, none but males may be found. In summer they are more separated, but do not keep in individual pairs, several being often found together.

"It may be questioned whether they do pair or not in places where they are at all numerous; if they do, it would appear that the union is dissolved as soon as the female begins to sit, for the male seems to pay no attention whatever to her whilst sitting, or to the young brood when hatched, and is seldom found with them.

"The call of the Moonal is a loud, plaintive whistle, which is often heard in the forest at daybreak or towards evening, and occasionally at all hours of the day.

In severe weather numbers may be heard calling in different quarters of the wood before they retire to roost. The call has a rather melancholy sound, or it may be that, as the shades of a dreary winter's evening begin to close on the snow-covered hills around, the cold and cheerless aspect of nature, with which it seems quite in unison, makes it appear so.

"From April to the commencement of the cold season, the Moonal, though there is nothing of cunning or artifice in its nature, is rather wild and shy, but this gives way to the all-taming influence of winter's frosts and snows; and from October it gradually becomes less and less wild, until it may be said to be almost tame, but as it is often found in places nearly free from underwood, and never attempts to escape observation by concealing itself in the grass or bushes, it is perhaps sooner alarmed, and at a greater distance, than other Pheasants, and may, therefore, appear to a casual observer at all times a little wild and timid.

"In spring it often rises a long way in front, and it is difficult to get near it when it again alights, if it does not at once fly too far to follow, but in winter it may often be approached within gun-shot on the ground, and when flushed, it generally alights on a tree at no great distance, and you may then walk quite close to it before it again takes wing.

"In the forest, when alarmed, it generally rises at once without calling or running far on the ground; but on the open glades or grassy slopes, or any place to which it comes only to feed, it will, if not hard pressed, run or walk slowly away in preference to getting up; and a distant bird, when alarmed by the rising of others, will occasionally begin and continue calling for some time while on the ground.

"It gets up with a loud fluttering and a rapid succession of shrill screeching whistles, often continued till it alights, when it

occasionally commences its ordinary loud and plaintive call and continues it for some time.

"In winter, when one or two birds have been flushed, all within hearing soon get alarmed; if they are collected together, they get up in rapid succession; if distantly scattered, bird after bird slowly gets up, the shrill call of each as it rises alarming others still further off, till all in the immediate neighbourhood have risen. In the chestnut forests, where they often collect in large flocks, and where there is little underwood, and the trees, thinly dispersed and entirely stripped of their leaves, allow of an extensive view through the wood, I have often stood till twenty or thirty have got up and alighted in the surrounding trees and have then walked up to the different trees and fired at those I wished to procure without alarming the rest, only those very close to the one fired at being disturbed at each report.

"In spring they are more independent of each other's movements; and, though much wilder, are more apt to wait, before rising, till individually disturbed. When they alight in the trees and are again flushed, the second flight is always a long one. When repeatedly disturbed by the sportsman or shikáris, they often take a long flight in the first instance.

"The seasons also have great influence over them in this respect, as well as in their degree of tameness or wildness. In spring, when the snow has melted in almost every part of the forest, and they have little difficulty in procuring an abundance of food, they appear careless about being driven from any particular spot, and often fly a long way; but in winter, when a sufficiency of food is not easily obtained, they cling to particular localities, seem more intent on satisfying their hunger, and do not so much heed the appearance of man.

"The females appear at all times much tamer than the males. The latter have one peculiarity not common in birds of this order: if intent on making a long flight, an old male, after flying a short way, will often cease flapping his wings, and soar along with a trembling vibratory motion at a considerable height in the air, when, particularly if the sun be shining on his brilliant plumage, he appears to great advantage, and certainly looks one of the most magnificent of the Pheasant tribe.

"In autumn the Moonal feeds chiefly on a grub or maggot which it finds under the decayed leaves; at other times on roots, leaves, and young shoots of various shrubs and grasses, acorns, and other seeds and berries. In winter it often feeds in the wheat and barley fields, but does not touch the grain; roots and maggots seem to be its sole inducement for digging amongst it. At all times and in all seasons, it is very assiduous in the operation of digging, and continues at it for hours together. In the higher forests, large open plots occur quite free from trees or underwood, and early in the morning,

or towards evening, these may often be seen dotted over with Moonals, all busily engaged at their favourite occupation.

"The Moonal roosts in the larger forest trees, but in summer, when near or above their limits, will often roost on the ground in some steep rocky spot. The flesh is considered by some nearly equal to Turkey, and by others as scarcely eatable. In autumn and winter, many, particularly females and young birds, are excellent, and scarcely to be surpassed in flavour or delicacy by any of the tribe, while from the end of winter most are found to be the reverse. They are easily kept in confinement, and one would imagine might, without much difficulty, be naturalized in Europe.

"The young males for the first year nearly resemble the females, but may easily be distinguished by the white feathers on the chin and throat being spotted with black. The vent feathers are also marked with the same, and the whole plumage has a darker and rather glossy appearance. When changing their plumage, they appear spotted all over with the brilliant metallic hues of the adult, and often present a very singular appearance. The second year they receive the whole of their splendid colours, with the exception of the seventh long feather of the wing which keeps the brown colour for another year.

"The most indifferent sportsman will find little difficulty in getting the Moonal. After the rains, till the end of October, the forests are scarcely fit to shoot in, except occasional spots in the higher parts ; and, though a few may be picked up, good sport cannot be expected till later in the season. In the spring, about the borders of the forests on the high ridges between one large valley and another, and about the large open grassy plots which abound in those regions, they will be found in great numbers ; and, though rather wild, to one partial to bird-shooting, afford very fair sport. Always walk below the place you expect to find them, as, with all the rest of the Himalayan Pheasants, they invariably fly downwards. If a shot cannot be had as the bird rises, and it alights on a tree, it is generally easy to approach it by getting the trunk of an intervening one betwixt the bird and yourself, keeping the body of the bird covered with the trunk till near enough. The most agreeable way of shooting Moonals is to change the smooth bore for a small rifle, as most of the shots will be while the birds are in trees, and many which offer a fair shot for a rifle at eighty or hundred yards fly off before one can get near enough for shot ; besides, it is excellent practice. From sportsmen only visiting the interior in spring, or immediately after the rains, few can have any idea what magnificent sport these birds afford in winter, when collected together in a small extent of forest. One has only then to encamp near some elevated village, in a well-wooded neighbourhood, and in the morning or evening ten or a dozen

may be killed in an hour's walk, while at other times half that number is a fair bag for a good shot and a persevering walker to bring home after a whole day's shooting."

I would add that, as is the case with all our Hill Pheasants, you require, if you want to enjoy the sport, a couple of good strong dogs, middle-sized spaniels, with good noses and trained to retrieve.

In a recent letter to me Wilson says:—"There is one peculiarity about the Moonal which I forgot to notice. Where-ever they are rare, there they are also sure to be very wild and shy. This is the case whether we look to countries widely separated, in one of which the birds are numerous, and in the other scarce, or to different neighbouring localities. For instance, Moonal are comparatively rare in Kashmir, while they are very abundant in Garhwál. In the former country they are very wild and shy; in the latter, as a rule, quite tame in comparison. But even in Garhwál, there are in many places miles and miles of forest, the Gangutri forests, for instance, where Moonals are as rare as in Kashmir, and in these places they are quite as wild; while in other forests, barely a day's march distant, they are plentiful and Barn-door Fowls in comparative tameness."

The great demand for the brilliant skins of the Moonal that has existed for many years has led to their almost total extermination in some parts of the hills, as the native shikáris shoot and snare for the pot as well as for skins, and kill as many females as males. On the other hand, though for nearly thirty years my friend Mr. Wilson has yearly sent home from 1,000 to 1,500 skins of this species and the Tragopan, there are still in the woods whence they were obtained as many as, if not more than, when he first entered them, simply because he has rigidly preserved females and nests, and (as amongst English Pheasants) one cock suffices for several hens.

No doubt the number of birds has greatly decreased in many of the more frequented localities during the past decade even, but I know scores of rather out-of-the-way forest-clad ranges where a man, who worked for them late in autumn or in winter, would still have no difficulty in bringing from five to eight brace to book in a day. It is common to lament the Moonal as rapidly becoming a thing of the past, but let sportsmen cheer up, there is a right good sprinkling of them still left.

I see that Wilson says nothing very definite as to range of elevation, and I may say that this varies commonly from about 6,000 to 12,000 feet, partly according to season, and partly according to the individual idiosyncracy of the bird. But I have shot an old cock, sunning himself on the point of a projecting rock just like a snow cock, at close to 15,000 feet elevation, and I have known stragglers killed by my people after bad weather in quite low valleys, not above 4,500 feet above sea level.

During the winter the natives trap and snare them throughout the Himalayas, and since skins of males have become worth Rs. 5 or 6 a piece, even to the villager who captures the bird, this business has received a great stimulus. The most common plan is to set nooses of sinew, gut, or the fibres of one of the hill nettles, about the localities they affect, in between a couple of rocks or bushes, or in openings purposely left in some small artificial barrier; but in some places they catch them with falling blocks of wood, just as capercailzie are trapped in Norway and Sweden.

Once or twice late in April I have come upon males nautching, with wings drooped, tail cocked and outspread, and breast almost touching the ground, shivering and quivering spasmodically, and moving backwards and forwards with tiny steps like Turkey-cocks, but the birds were always off before I could really study the peculiarities of their nuptial dance.

The Moonal breeds throughout the forest-clad ranges of the Himalayas, at any rate from Kashmir to Bhután, at elevations of from 7,000 or 8,000 to fully 12,000 feet.

The breeding season is in May and June. They have only one brood, and the female alone incubates the eggs and rears the young.

Usually the eggs are laid in a bare depression in the ground, scratched by the female, under the shelter of some overhanging rock, the massive root of some large tree, or some thick tuft of fern, but at times the hollow is more or less lined with dry grass, dead leaves, or a little moss.

In localities where they are very numerous, *e.g.*, on the "*Chor*" not far from Simla, several nests may be found within a circle of a hundred yards, as if the females were, even at this season (as they are at all others), more or less gregarious.

Six is the largest number of eggs that I have known to be found in any one nest, and four or five is certainly the usual number; but native sportsmen talk of finding occasionally as many as a dozen.

Long ago my old friend "Mountaineer" remarked: "The female makes her nest under a small overhanging bush or tuft of grass, and lays five eggs of a dull white, speckled with reddish brown. The chicks are hatched about the end of May."

He now writes to me from Garhwál:—

"The Moonal breeds at elevations from 8,000 to 12,000 feet in all sorts of forest. Some begin to lay early in May, others not till the end of the month. The nest is placed in much the same situations as that of the Koklass, that is to say, always under some slight shelter, an overhanging bush or tuft of grass, or rock or stone, or in the hollow at the foot of a tree, or under an old trunk. It is merely a hole scraped in the ground, but bits of grass, leaves, &c., which are round it, are often dropped

in, and, with some feathers from the bird, form a sort of lining. Nothing is *brought* in to make a nest either by the Moonal or, I think, any others of our hill game birds. I have generally found five eggs in a nest, sometimes only two or three, but never more than five. In a small work which I lately read, FIVE WEEKS IN THE HIMALAYAS, by Captain Matthias, the author mentions finding a Moonal's nest with nine eggs, but I fancy he must have mistaken the nest of a Koklass for that of a Moonal. The eggs are about 2·75 long and 1·75 wide, buffish white, powdered with chocolate and in some with spots and blotches of the same colour. If the eggs are hatched under a domestic fowl, the chicks take readily to the foster mother, but often seem at a loss how to get on with her. The young broods in the forest are generally found with the hen bird only. Indeed, I doubt if the Moonal *pairs* at all. Where they are rare, they may do so; but where numerous, I think not. For a couple of months the chicks are alike in colour, and then the males begin to change slightly. At four months they are easily distinguishable, though they get none of the bright feathers till the second moult."

Writing from Dharmsála, Captain Cock said: "The Moonal breeds in May and June, and lays from five to eight eggs in a hollow on the ground, either under some rock or fallen tree, or a thick rhododendron bush. The eggs vary in colour, but not in shape,—some being spotted with broad spots, and others speckled with fine specks. The eggs are very like those of the Turkey. The nidification of this bird depends much on the year. In mild winters, when the snow is off the ground, they begin earlier. No nest to speak of is made, but a few feathers are sometimes found about the eggs."

Captain Hutton writes: "These birds do not occur so low down as Mussooree, but are found in abundance on the next range. In days of yore they were found at Simla, but civilization has of late years banished them to less disturbed localities. It makes no nest, but lays its eggs on the ground; the number not satisfactorily ascertained, as one nest contained three, and another four, eggs of a pale brown or sandy hue, thickly sprinkled over with reddish brown spots and dashes."

The eggs in shape and size closely approximate to those of our domestic Indian Turkey, but are, as a whole, slightly larger, and, considering how much heavier the Turkey is, this difference in the egg is remarkable. The shell is fine and compact, showing none of the pores so conspicuous on Pea-Fowl's eggs; but they have only a faint gloss, and contrast in this respect strongly with the eggs that our domesticated Turkeys here commonly lay. The shape is a long oval, a good deal compressed towards the small end. The ground colour is a pale *café au lait* or buffy white, and they are thickly and coarsely freckled all over, but most thickly over the central portion of the egg, with deep

reddish brown, which has a sort of raw sienna tint. The markings are sometimes nearly wanting towards the small end, and are always, I think, least conspicuous and least dense at the two ends. Sometimes the whole egg is densely mottled all over with the reddish brown; sometimes again the markings are almost wholly wanting; and in some they are gathered into large and comparatively bold blotches.

In length the eggs vary from 2·41 to 2·69, and in width from 1·7 to 1·89; but the average of thirty-six eggs is 2·55 by 1·78.

THESE BIRDS vary a good deal in size, and very notably in weight, according to age.

Males.—Length, 26 to 29; expanse, 34 to 37; tail from vent, 9·5 to 10·5; wing, 11 to 12·2; tarsus, 2·7 to 3·0; bill from gape, 1·9 to 2·1. Weight, 4lbs. 6 ozs. to 5 lbs. 4 ozs.

Females.—Length, 24 to 26; expanse, 34·0 to 36·5; tail from vent, 9·0 to 10·0; wing, 10·3 to 11·1; tarsus, 2·65 to 2·9; bill from gape, 1·7 to 1·9. Weight, 4lbs. to 4lbs. 12 ozs.

In the male the bill is blackish, with the ridge, cutting edges, and lower mandible pale horny. In the female it is paler; the upper mandible a dark horny; the lower whitish; the legs and feet vary from dusky greenish to pale yellowish green; the claws are dark horny; irides clear, dark brown; orbital skin pure cærulean to brilliant turquoise blue.

THE PLATE, though it very fairly represents the shape and general appearance of both sexes, fails utterly to convey any adequate conception of the intensely brilliant metallic lustre of the upper plumage of the male. Perhaps no chromo *could* accurately reproduce this.

LOPHOPHORUS SCLATERI.

THE CRESTLESS MOONAL.

Lophophorus sclateri, *Jerdon.*

Vernacular Names.—[?]

NOTHING is yet known of the habits, or even of the exact habitat, of this striking bird.

A few live specimens, and a few bad skins have, from time to time, been brought down by, I believe, both Mishmis and Abors, to the fair held annually at Sadiya, the most easterly of our stations at the extreme head of the Assam Valley. The bird is said to come from the higher hills, east and south-east of Sadiya.

The female is as yet unknown.

AS REGARDS dimensions, I can only give what I recorded from the only fine skin I ever saw, with the colours of the soft parts as noted for me from the live bird by Dr. Jerdon, who may be considered the real discoverer of the species.

Length, 27; wing, 12·4; tail from vent, 9; bill at front, straight, 1·3; from gape, 1·95; tarsus (feathered in front and at the sides for 1·2), 3·2; mid-toe to root of claw, 2·45; claw, 0·75; hind-toe to root of claw, 0·8; claw, 0·6.

On one leg a short blunt spur, 0·5 in length, on the other merely a low horny boss.

The fifth quill is the longest, the sixth sub-equal, the fourth 0·3, the third 0·9, the second 2·1, and the first 2·6 shorter than the longest.

There is a large bare space all round the eye, which, in the fresh bird, is bright blue, dotted with tiny tufts of black hair-like feathers; the irides are brown; the legs and feet brown or yellowish brown; the bill yellowish horny.

THE PLATE, copied, I believe, from one in the P. Z. S., though like that of the common Moonal, failing to do justice to the metallic radiance of the plumage, is, in most other respects, good, but it wrongly exhibits the legs as lead coloured; represents the facial skin as too pale and dull coloured, and the band on the tail, which is really a deep maroon chestnut, as far too pale and orange.

I have never seen the bird alive, but I have examined a very fine skin of a male, and a brief description taken from this skin may be useful :—

"The entire lower parts, including the wing lining, velvet black ; the feathers in one light with a dim slightly greenish, and in another light with a faint purplish reflection.

"The sides, top, and back of the head metallic green ; all the occipital and nuchal feathers curled up, much like the feathers on a pelican's neck ; the ear-coverts metallic green, with a decided steel blue glance ; the entire back and sides of the neck rich burnished copper colour ; base of the back of the neck and entire interscapulary region very bright metallic green, scarcely at all mingled with any other coloured reflections ; middle back, rump, and upper tail-coverts pure silvery white ; most of the feathers of the rump dark shafted ; tail a deep maroon chestnut, all the feathers broadly tipped with white ; primaries and their greater coverts and secondaries black, the latter with metallic reflections towards the tips on the outer webs ; the rest of the wing and scapulars all with a brilliant metallic lustre, as it were burnished, mostly more or less green in one light, but the feathers about the shoulder of the wing with a deep steel blue and purple glow ; the lesser coverts immediately below these with an intense ruddy golden or coppery glow, and most of the lesser and median coverts and the outer scapulars with more or less of golden or coppery reflections in different lights.

A THIRD species of this genus, *Lophophorus l'huysii*, is known from Chinese Tibet. It is even larger than either of our birds, and is well crested, though the crest is quite different to that of the common Moonal.

CERIORNIS SATYRA.

THE INDIAN CRIMSON TRAGOPAN.

Ceriornis satyra, *Linné.*

Vernacular Names.—[Loongee, *British Garhwál and Kumaun* ; Omo, (Bhutia) Moonal, (Perbuttia) *Nepal ;* Tirriakpho (Lepcha), Bup, (Bhotia), Nunal (Hindustani), *Sikhim ;* Dafia (Bengali, apud Jerdon)].

THE higher wooded ranges of the Central and Eastern Himalayas are the home of our Crimson Tragopan. Westwards, it extends to Kumaun and the western portions of British Garhwal, where the Aláknanda Valley marks its westernmost limits.* It is found in suitable localities throughout Nepal and Sikhim and well into Bhután. How much further east it occurs is still uncertain. Godwin-Austen does not mention it in his list of Daphla Hill birds, but I have seen a skin sent from Tezpur said to have been brought down from these Hills.

IN THE SUMMER they are to be found at elevations of from 8,000 to 10,000 feet, always in thick cover, by preference in patches of the slender reed-like ringal bamboo, in the neighbourhood of water.

Although always on hills near to or bordering on the snow, they are never seen amongst it (except perhaps in winter), and seem to shun it, as much as the Blood Pheasant delights in it. Even the Moonal will be seen high above the forest, well up on grassy slopes, fringed with and dotted about with patches of snow. But the Tragopan is essentially a forest bird, rarely if ever wandering up towards the snow or into the open, and though frequenting perhaps rather their outskirts than their deeper recesses, it hardly ever voluntarily quits the shelter of the woods and their dense undergrowth.

Except by chance, when you may come upon a male sunning himself or preening his feathers on some projecting rock or bare trunk of a fallen tree, these birds are never to be seen, unless by aid of three or four good dogs, who will speedily

* During a period of over 30 years that he has worked these hills, Mr. Wilson has known only one exception to this rule. Once one of his people shot a cock-bird of this species, a good deal further west, *viz.*, in the Kattor Valley, three valleys west of the Alaknanda Valley.

Colonel Fisher's testimony is nearly to the same effect. He says :—

"This bird occurs in all the northern pargannas of Kumaun, but only in the two north-eastern pargannas, Dasoli and Painkhunda, of Garhwál and not, I think, further west.

rouse them up, or of a trained shikári, who will call them out by cleverly imitating their loud bleating cry.

If you ever catch a passing glimpse of them, it is but for a second; they drop like stones from their perch and dart away with incredible swiftness, always running, *never*, so far as I have seen, rising, unless you accidentally almost walk on to them or have dogs with you.

With good dogs, it is easy enough at times to get them out of the ringal patches that they seem to affect so much; they cannot run much in these, and as they fluster up to get clear of the bamboos, they present the easiest of shots. When well on the wing they go swift enough, generally down hill, dropping after a quarter of a mile, and then invariably making tracks on foot. It is useless to seek them where they lit, but a cast down the side of the hill, three or four hundred yards right or left of the line they took (and if there is only one gun you must guess from the look of the ground which way they are likely to have worked), will often put the dogs near enough to find them. The hens are never, I think, seen unless roused by the dogs, and while cocks get up single, three or four hens will be put up in the same place, I mean within a few yards of each other.

To judge from those I have examined, they feed much on insects, young green shoots of bamboos, and on some onion-like bulbs, but Mr. Hodgson notes that those he examined had fed on wild fruits, rhododendron seeds, and, in some cases, entirely on aromatic leaves, bastard cinnamon, daphne, &c.

When first roused, they do not take long flights; if the dogs come upon them, as often happens before they have seen you, they will fly up straight into a tree, and call vociferously, craning down from some nearly horizontal branch at the yelping dogs; but if they have become aware of the man, they dart off, threading their way through the wilderness of trunks, and are soon lost in the dim recesses of the forest.

If you succeed in rousing them a second time, or if you have fired at them on a previous day, or even if several shots have been recently fired in their immediate neighbourhood, and you put them up just at the outskirts of the forest, so that there is a clear field before them, they will go right away, across the valley, or right over a hill's brow with a power of wing not to have been anticipated from their usual, when first disturbed, short dodging flights.

At the end of April, and very likely earlier, the males are heard continually calling. When one is heard calling in any moderate-sized patch of jungle, you make for the nearest adjoining cover, and work your way sufficiently near to the outside to get a view of the intervening space. Then you squat, and your man begins calling. Very soon he is answered, too often by some wretch of a bird behind you, who persists in feretting you out, gets scent of

you, and goes off with a sudden series of alarm notes that frightens every other bird within a mile, you never having caught the smallest glimpse of it throughout. But if you are in luck, and all goes well, the right bird, and the right bird only answers, and answers nearer and nearer, till, just as your dusky comrade, forgetting, in his excitement, his wonted respect, pinches your leg, you see a head emerge for a second from the bases of the ringal stems opposite; again and again the head comes out with more and more of the neck turned rapidly right and left, and then out darts the would-be combatant towards you; the gun goes off, everything is hid for a moment in the smoke hanging on the damp morning air, and then—well there is no trace of the Tragopan! I protest that this is an exact account of the only good chance I ever had at one of these birds on the calling "lay."

Alas! "the merry days when we were young!" I was soaking wet, my legs were perfect porcupines of spear grass (we had crossed a low valley) and leeches innumerable were feasting on my miserable self, but I said, and thought, that it was splendid sport!

The most characteristic points about these Tragopans are the fleshy horns of the males and their gular lappet, which latter, during the breeding season, especially when the birds are excited by passion, extends downwards several inches, but which, during the winter, are barely traceable.

The horns, too, though erected when courting, are greatly diminished in size during the winter, and even during the breeding season are, except at moments of excitement, concealed amongst the crest feathers. They commence on the forehead opposite the anterior angle of the eye, and their bases extend backwards, as far as opposite the posterior angle, but despite this lengthened base, above which they are sub-cylindrical, they lie back closely against the occiput and back of the neck, and are completely hidden by the crest.

The whole orbital region is covered with a peculiar thick velvety skin, which is prolonged over the lower jaw, and below this spread and loosened into the gular flap. On the cheeks this skin is thinly clad with small soft plumes, on the jaws and chin thinly sprinkled with hair-like feathers, and on the throat quite naked.

Brilliant as is the plumage of the birds, its effect is greatly enhanced by the vivid blue of the horns and cheeks and blue and orange of the wattle, but these are only to be seen to their fullest advantage when the bird is courting. I have never witnessed their nuptial dances, but natives have told me of it, and it has been observed in captivity and carefully described by Mr. Bartlet, as seen by him in the Zoological Society's Gardens. He says:—"The males can only be seen to advantage in the early morning and in the evening, as they conceal themselves during the day; the females, however, are less retiring in their habits. When the male is not excited, the horns lie concealed under

two triangular patches of red feathers, their points meeting at the occiput; the large wattle is also concealed or displayed at the will of the bird. The male has three distinct modes of 'showing off,' if I may be allowed the expression. After walking about rather excitedly, he places himself in front of the female, with the body slightly crouching upon the legs, and the tail bent downwards; the head is then violently jerked downwards, and the horns and wattle become conspicuous. The wings have a flapping motion, and the bright red patch on them is fully displayed. The whole of the neck appears to be larger than usual during this action, as do also the horns, which, moreover, vibrate with every movement. This scene is concluded by the bird suddenly drawing himself up to his full height, with his wings expanded and quivering, the horns erect, and the wattle fully displayed. The second mode consists of simply erecting all his feathers, and elevating one shoulder, thereby exposing a greater surface to view, without however showing his head-dress. The third mode is by simply standing boldly erect on an elevated perch, giving the head one or two sudden shakes, and causing the horns and wattle to appear for a few moments."

In the cold weather they descend much lower, and are then much tamer, and, as Captain Beavan tells us, readily snared. Writing of Sikhim, he says :—

"The winter months, when the underwood is not so dense as at other seasons, are the only period of the year at which even the natives can get at them. The usual plan of capture is by making a hedge of bushes about three feet high, extending down the sides of a hill, like the sides of a triangle, with the base open. The sides are made to gradually converge until near the apex, where small gaps are left, in each of which a noose is placed. The birds are then slowly driven by men on foot walking in line from and parallel to the base of the triangle and towards its apex; and the birds continuing to run instead of resorting to flight, dash through the openings and are caught in the nooses. A curious fact with regard to this mode of capture is, that the proportion of males to females is generally four or five of the former to one of the latter."

Some of Colonel Tickell's reminiscences of this species are well worth reproduction. He says :—

"In 1842, when I was at Darjeeling, the Crimson Tragopan was to be met with between Pacheem and the Sungphul Mountain, along the road from Kutshing to the Sanitarium; and a clever snap shot might bag one or two in the early part of the winter, during a foggy mizzly morning. It was necessary to proceed rapidly and noiselessly along the road, peeping warily down each watercourse that crosses the path, and shoots into the valley below. These gullies are shut in with the dense

jungle that clothes the sides of the hills; but here and there a rock stands out, leaving a small open space, and on this occasionally, at such an hour, and if no one else had haply passed that way, a Pheasant might be seen standing proudly upright, or snatching a hasty breakfast ere the growing day sent him to the valley below. If the birds were within shot (but, indeed, in such thick cover, to be within sight was to be within shot), the sportsman either then and there potted him, or, if in a more chivalrous mood, started him on the wing, and took him as he rose to clear the jungle. Sometimes the bird, especially if a hen, would, on catching sight of the sportsman, run into cover.

"As before said, a snap *pot*, when the bird is first sighted on the ground, or a snap *shot*, as he rises through the bushes, is the sportsman's only chance. When a fine cock-bird shoots into the air, his inexpressibly rich plumage in clear relief against the snowy white mist of the valley far below is a splendid sight indeed! The aim should be quick, and the charge heavy—of No. 1 or 2—for if not killed at once, search for a wounded bird is almost always profitless toil; and if it be only winged, pursuit is as vain as if it were missed altogether. Alas! if missed, the unlucky wight sees the kaleidoscopic vision shoot like a ruby meteor down the dizzy depth below, across the misty valley to settle in the woods of some far distant hill—*Eheu, nunquam revisura!*"

THE CRIMSON Tragopan breeds high up, at elevations of from 9,000 to 12,000 feet, in the forests that lie below the snow, or in dense patches of the hill bamboo; but I have never found the eggs myself, and my account is based on the statement of natives, from whom I received the only eggs I possess, which latter were taken in Kumaun in May.

The eggs are much like large hens' eggs, perhaps rather more elongated and more compressed towards the small end. The shell is only moderately stout, and the surface is conspicuously pitted over with pores. In colour they are nearly white, having only a faint *café au lait* colour, and they are here and there very slightly freckled with a pale dull lilac. One egg is somewhat darker and entirely wants these markings. They have very little gloss. In length they vary from 2·54 to 2·62, and in breadth from 1·8 to 1·84.

NUMEROUS MALES, measured in the flesh, varied as follows:—

Length, 26·5 to 28·5; expanse, 32·0 to 34·75; wing, 10·0 to 10·6; tail from vent, 10·0 to 11·5; tarsus, 3·25 to 3·75; bill from gape, 1·44 to 1·52. Weight (adults) 3lbs. 8ozs. to 4lbs. 10 ozs.

In an adult male killed in May, the bill was blackish brown, paler at the tip; the irides deep brown; the legs and toes pale

fleshy; the claws brownish horny grey; the upper throat and orbits fine purplish blue; the gular wattle orange or salmon coloured, laterally with narrow transverse blue bars; the horns bright lazuline blue; 3·15 inches in length. (In February they would have been perhaps 1·25.) The spur 0·3 in length and greyish brown. In other males, I have noted the legs as fleshy grey, more or less tinted with crimson, the tint varying very much in intensity. An immature bird had the legs almost pure white. In some males the spurs are much longer, sharp and somewhat curved.

Females, measured:—Length, 21·5 to 23·75; expanse, 28·5 to 30·0; wing, 8·5 to 9·0; tail from vent, 8 to 10; tarsus, 3·0 to 3·25; bill from gape, 1·25 to 1·45. Weight, 2lbs. 4 ozs. to 2lbs. 10 ozs. The legs brownish grey, more or less fleshy; the bill dusky horny; the irides brown; the legs of the females have often a purplish tinge, and generally exhibit obsolete tubercles for spurs.

THE PLATE only greatly errs in the colouration of the orbital region, and in showing no salmon colour on the wattle, which would be conspicuously visible, with the flap half distended as shown. But the tender grace of the delicate grey shading on the flanks of the male, the marvellous blending of colours on the wing, and the depth and richness of the tints of the female's plumage, which is a perfect poem without words, are all lost in the harsh staring chromo.

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CERIORNIS MELANOCEPHALA.

THE WESTERN TRAGOPAN.

Ceriornis melanocephalus, *Gray.*

Vernacular Names.—[Jewar, Jowar, *Garhwál;* Jaghi, Jajhi, *Bussahir;* Singmonal (Hindustani), *N. W. Himalayas;* Jigurana, Jeejurana *(male)*, Bodal *(female)*, *Kullu*, *Mandi*, *Sukeyt;* Fulgoor (Pahári Hindi) *Chamba.*]

THE Western Tragopan does not quite meet its eastern representative. Its eastern limit is the ridge between the Kattor and Bhilling rivers, in native Garhwál, and then for some four days' march you meet with neither species. In this interval, there are three high ridges to cross that divide the Bhilling Rand Valley from that of the Bangar Rand, this latter from the Mandagni Valley, and this latter again from that of the Alaknanda.

Westwards of the Kattor Bhilling ridge, it is the only species found in native Garhwál, and thence it extends westwards along all the higher well-wooded ranges, as far, at any rate, as Kashmir.*

IT IS MANY years since I shot this beautiful species, and it was then neither rare, nor, even in spring and summer, difficult to obtain with good dogs, in suitable localities, and these were forest-clad slopes, ridges and spurs of from eight to eleven thousand feet elevation adjoining or running down from higher snowy ridges.

A recent writer, Baldwin, says that this "is by far the rarest of all our Hill Pheasants, and is now, from constantly being snared and shot, seldom met with, and then only in the most unfrequented valleys and regions hardly ever visited by sportsmen. In fact, a hunter might wander for years together in our hills without once coming across the bird."

Of course he might, if he did not know where to look for them, but from all the enquiries I have recently made, I believe there are plenty of Tragopans left, and that though they have been driven away from the immediate neighbourhood of our large Hill Stations,† there are enormous tracts in which they are just as plentiful as when I was a boy.

* How far it extends in Kashmir is uncertain. Biddulph writes that he has not yet seen it west of the Indus, but it certainly occurs in Hazára.

† Up to within 15 or 20 years ago, one or two used to be shot every winter on Jakko, the central hill of Simla, which is very little over 8,000 feet elevation.

They were, and always will be, during the warmer seasons of the year (they are much tamer I know in winter) rather wild and shy, given to skulking, and hard to flush, unless by accident you come suddenly upon them. In no place did I ever find them numerous as the Moonal often is; but, though scattered widely, there were, and the most reliable sportsmen tell me that there still are, plenty of them, if they are looked for in suitable places, in the right way *and* with good dogs. To go after Tragopans in summer without these latter, is much like going fishing without hooks.

Writing from Kullu recently, Mr. Young remarks:—

"This is, of all the Indian Pheasants, perhaps the one most easily reared in captivity. Its habitat is much the same as that of the Moonal, though its zone of distribution descends to a somewhat lower altitude. Its favourite food is the berry of an evergreen plant called in Kullu *Dekha*; it is, I believe, a species of Carunda.

"I have always found this bird much easier to shoot than the Moonal; when put up by dogs, I have known a dozen or so fly up into the surrounding trees, uttering their curious call, something between a kid's bleat and the cry of a wild goose.

"Once in the trees, they never offered to move, but sat stupidly staring at the dogs, whilst I picked them off one by one. This, however, was only early in the season; later they get wiser, and are very wild, going off a long distance after the first couple of shots.

"I have not unfrequently seen this bird in company with the Moonal in the summer months, when I have often found them together in the grassy patches in the higher forests, a small company of a dozen or so of each species, and more rarely one or two Cheer."

It is only in out-of-the-way places that they are thus tame, and I cannot myself say that I have ever found them feeding out in the open; but the habits of all these birds do vary a good deal according to locality, and I quote the above for comparison with Wilson's old note, which, as in many other cases, still gives, to my fancy, the best and most exhaustive account of the habits of this species:—

"Except where an isolated village is situate high up in a densely-wooded locality and surrounded by thick forest, the Jewar is seldom or never found near the habitations of man, but frequents the darkest and most solitary parts of the woods, where it is not often subject to disturbance; and keeps so still and secluded in their shady recesses, that not one in twenty of the inhabitants of the nearest villages ever see one, except when caught or killed by a shikári.

"In autumn and winter its haunts are in the thickest parts of the forests of oak, chestnut and morenda pine, where the

box tree is abundant, and where, under the forest-trees, a luxuriant growth of '*ringal*,' or hill bamboo, forms an underwood in some places almost impenetrable.

"They keep in companies of from two or three to ten or a dozen, not in compact flocks, but scattered widely over a considerable space of forest, so that many at times get quite separated, and are found alone.

"In places where seldom disturbed, the whole lot are sometimes found within a compass of twenty or thirty yards, while, where often subject to intrusion, they get scattered and keep in ones and twos in different quarters of the forest, but if left undisturbed for a week or two, they will again collect together. They seldom forsake entirely a regular resort, however much disturbed, but get so shy and wary that it is very difficult to find, and almost impossible to shoot them. Here they pass the winter months, seldom wandering away from the particular quarter they have chosen for a resort, which they return to year after year; and while there located, if not disturbed, never leave it to any distance, though many other parts of the wood are exactly of the same character.

"If several lots are in the forest, each lot appear to have their own favourite quarter, and never intermingle with the others.

"The trees furnishing them with a sufficiency of food, though the ground be covered with snow many feet in depth, the severest storms of winter do not, speaking of the species generally, cause them to change their locality. After a severe fall of snow, a few occasionally leave for a time their usual haunts, if in a very bleak quarter, or at any considerable elevation, and are found in places widely differing, as small patches of forest on a bare exposed hill side, narrow wooded ravines, patches of low brushwood and jungle, and anywhere where the ground is sheltered from the sun by trees and bushes. Sometimes one is found in a similar situation in fine weather, probably driven out of its retreat by an Eagle* or Falcon; but these are rare exceptions, and they soon again return to their regular resorts.

"At this season, except its note of alarm when disturbed, the *Jewar* is altogether mute, and is never heard of its own accord to utter a note or call of any kind, unlike the rest of our Pheasants, all of which occasionally crow or call at all seasons. When alarmed, it utters a succession of wailing cries, not unlike those of a young lamb or kid, like the syllables '*waa, waa, waa*,' each syllable uttered slowly and distinctly at first, and more rapidly as the bird is hard pressed or about to take wing.

"Where not repeatedly disturbed, it is not particularly shy, and seldom takes alarm till a person is in its immediate

* The Nepal Hawk-Eagle, *Limnaëtus nipalensis*, is an inveterate foe to both species of Tragopan and to the Moonal.

vicinity, when it creeps slowly through the underwood or flies up into a tree, in the former case continuing its call until it is again stationary, and in the latter, till it has concealed itself in the branches. If several are together, all begin to call at once, and run off in different directions, some mounting into the trees, others running along the ground.

"When first put up, they often alight in one of the nearest trees; but if again flushed, the second flight is generally to some distance, and almost always down hill. Their flight is rapid, the whirr peculiar, and, even when the bird is not seen, may be distinguished by the sound from that of any other.

"Where their haunts are often visited, either by the sportsmen or the villagers, they are more wary; and if such visits are of regular occurrence, and continued for any length of time, they become so in a very high degree, so much so that it is impossible to conceive a forest bird more shy or cunning. They then, as soon as aware of the presence of any one in the forest, after calling once or twice, or without doing so at all, fly up into the trees (which, near their haunts, are almost all evergreens of the densest foliage), and conceal themselves so artfully in the tangled leaves and branches that, unless one has been seen to fly into a particular tree, and it has been well marked down, it is almost impossible to find any of them.

"In spring, as the snow begins to melt on the higher parts of the hill, they leave entirely their winter resorts, and gradually separate and spread themselves through the more remote and distant woods, up to the region of birch and white rhododendron, and almost up to the extreme limits of forest.

"Early in April they begin to pair; and the males are then more generally met with than at any other period; they seem to wander about a great deal, are almost always found alone, and often call at intervals all day long. When thus calling, the bird is generally perched on the thick branch of a tree, or the trunk of one which has fallen to the ground, or on a large stone. The call is similar to the one they utter when disturbed, but is much louder, and only one single note at a time, a loud energetic '*waa*,' not unlike the bleating of a lost goat, and may be heard for upwards of a mile. It is uttered at various intervals, sometimes at every five or ten minutes for hours together, and sometimes not more than two or three times during the day, and most probably to invite the females to the spot.

"When the business of incubation is over, each brood, with the parent birds, keep collected together about one spot, and descend towards their winter resorts as the season advances; but the forests are so densely crowded with long weeds and grass, that they are seldom seen till about November, when it has partially decayed, and admits of a view through the wood.

"They feed chiefly on the leaves of trees and shrubs; of the former, the box and oak are the principal ones; of the latter, *ringal* and a shrub something like privet. They also eat roots, flowers, grubs and insects, acorns and seeds, and berries of various kinds, but in a small proportion compared with leaves. In confinement they will eat almost any kind of grain.

"Though the most solitary of our Pheasants, and in their native forests perhaps the shyest, they are the most easily reconciled to confinement; even when caught old they soon lose their timidity, eating readily out of the hand; and little difficulty is experienced in rearing them.

"The sportsman desirous of getting the *Jewar* should endeavour to learn from the shikáris and people of the place whether any are to be found in the neighbourhood before he commences what may otherwise prove a toilsome and unsuccessful search. You may hunt over very likely forests without finding a single bird, and without previous information there is nothing for it but to work through every part of the wood. In autumn and winter, having learnt that the birds *are* about, he should proceed to some well-wooded locality, and after taking a survey of the general aspect of the forest, direct his way to some well-wooded ravine or hollow, where the tapering summits of the morenda pine may be seen towering above the rest of the forest trees, and the dense and closely-wooded character of the forest shuts out from a distance all view of the ground.

"Dogs are not necessary, but can do no harm if properly under control.

"Should he pass near a spot where any of the birds are, he will soon be made aware of their vicinity by their peculiar call, which they will invariably utter on his approach.

"If they begin calling while he is at a distance, or the underwood prevents their being seen, though near, he should press on them as quickly as possible, and endeavour to force them to rise, or try and get a shot while one is passing over some exposed spot, before they conceal themselves, in which they have few equals. If they fly into the trees, the particular tree into which one has flown, must be well marked down, and, if possible, the particular part, or it will be difficult to find it. From the thick and tangled character of the woods where they generally resort, crowded and entangled with multitudinous trunks and arms of trees, and dense clusters of tall *ringal*, it is seldom a fair shot can be got at them on the wing, and the only alternative is to shoot them in what some will perhaps deem an unsportsman-like way, on the ground, or in the trees.

"A lot once found in any part of the forest, they may, to a certainty, be found again daily at the same spot, or in its immediate vicinity, but each day they will become more shy and wary, and it is useless to hunt for them on the same ground many days successively, as, after being disturbed once or twice,

it will be next to impossible to get a shot, though many birds may be found. They will be scattered singly in widely distant places ; some will keep in the trees altogether, one now and then flying off close above the sportsman's head, but so suddenly and rapidly as to leave little chance off his getting a shot at it ; and many, as soon as aware of the sportsman's presence in the wood, will, without waiting for his approach, conceal themselves so artfully as to leave only a bare possibility of his ever finding them.

"Even if the particular tree into which one has been seen to fly is immediately approached, one may stand for an hour under it, and examine almost every leaf and branch without being able to discover the bird, and should one even succeed in doing this, one is still too often disappointed in getting a shot, as they seem to keep their eye fixed on your movements, and to become aware of the very moment they are discovered, darting off before the gun can be put to the shoulder.

"In spring, which is the season most generally chosen by the sportsman for excursions in the interior, he will have a better chance of finding them than in autumn, as then they are not so restricted in their resorts, but are distributed all over the forests, and the males do not so much covet concealment. They should now be sought for in the higher parts of the forest, where the birch tree begins to make its appearance, and it is advisable to sit and listen at intervals for their call. On hearing it, the sportsman should proceed as quickly and noiselessly as possible to the quarter from whence the sound proceeded, listening at times for a repetition of the call to guide him to the exact spot. The bird will generally be found on some exposed spot where a nice pot shot (oh!) may be had. Great caution must be taken, particularly when getting near, as, if once disturbed, there is little chance of finding the bird again that day.

"The *Jewar* roosts in trees, and in winter, perhaps for warmth, seems to prefer the low evergreens, with closely-interwoven leaves and branches, to the larger trees which overshadow them."

THE ONLY eggs of the Western Tragopan that I have yet seen are six sent to me by Captain Unwin from Hazára, which were taken on the 25th May 1869 by Captain Lautour, who communicated to him the following note:—

"I was shooting on a range of hills from 8,000 to 11,000 feet high. The Argus in parts very plentiful, the hills covered with pine forests, and the Argus I used to find about one-fourth of the height of the hill from the top, and they appeared to affect the vicinity and edges of snow nallas and landslips, where there was a fair quantity of undergrowth, and where there were plenty of rocks.

"At the time of finding the nest, I was on the look-out for Pheasants, but the ground being rather stiff, I had just given up

my gun to the shikári, when the bird got up almost at my feet. I was going through a pine forest, and had reached a place where an avalanche or landslip had carried away all the pine trees, and in their place, small bushes and shrubs, resembling the hazel, had sprung up. I was descending into this, when the bird got up, as I said before, almost at my feet. The nest was on the ground, and was very roughly formed of grass, small sticks, and a very few feathers; it was very carelessly built. More I did not observe, as the bird, having gone down close, I wanted to shoot it.

"I did not succeed in doing this, but from the close view I had of it, and the attention I have since paid to all our Pheasants, I have no doubt the bird was a hen Argus."

Indian sportsman always miscall this species, and the previous one, "The Argus." I may add that there is no earthly doubt of the correctness of the identification, as there is absolutely no other bird in the Western Himalayas that *could* have laid these eggs.

The eggs are more or less elongated ovals, considerably compressed towards the small end. They are, as a whole, of very much the same length, but a good deal slenderer than the eggs of the *Moonal.* The shell is fine, but almost absolutely devoid of gloss. Looked at from a little distance, they appear to be of a uniform colour and devoid of markings, and seem to vary from a pale *café au lait* to a dull reddish buff; looked into closely they appear to have a somewhat lighter ground colour, excessively finely and minutely freckled and spotted with a somewhat darker shade. They are the least glossy of all the true game birds' eggs that I know, and in shape and texture, though not in tint, remind one not a little of those of the King Curlew and White Ibis, and other birds of that family.

In length they vary from 2·4 to 2·55, and in breadth from 1·68 to 1·72; but the average of the six eggs is 2·51 by 1·7.

I HAVE unfortunately lost my paper of measurements, &c., of this species. The following are chiefly from Wilson:—

Males.—Length, 27 to 29; expanse, 37; wing, 11·25; tail, 10·5 to 11; tarsus, 3. Weight, 4·5lbs. Bill blackish; irides hazel brown; naked skin round the eye bright red, two fleshy horns about an inch and a half long, sky blue; the gular wattle purple in the middle, fleshy on the sides, spotted and edged with pale blue; legs and feet pale flesh colour, approaching to white.

I, however, distinctly remember that the horns had sometimes a very greenish tinge; that there were some blue markings on the face below the eye, and that the pinky portion of the throat lappet was, in some cases at any rate, a vivid salmon pink. The legs, too, become much redder during the breeding season.

In the cold weather, the horns and lappet shrivel up to nothing, and can barely be traced, and even in the summer it

is only when the bird is more or less excited that the horns are raised, or the apron-like lappet extended. Both are of course absent in females, which, moreover, have no naked skin round the eye.

Females.—Length, 24 ; expanse, 32 ; wing, 10 ; tail 9. Legs and feet greyish ashy.

Wilson says :—" The young male for the first year is scarcely to be distinguished from the female ; the second, the red feathers on the neck and throat and the white spots begin to make their appearance ; the third, he gets the handsome plumage of the adult males. The flesh is tender and well flavoured."

As to this last, tastes differ ; I should say that they were, as a rule, much like a common village fowl ; no better, and often a good deal worse.

THE PLATE, though really very good in other respects, has the legs of the female wrongly coloured, the eye piece of the male too pink, the bill too light coloured, and omits the blue edgings and markings on the lateral portions of the gular apron.

Some females are coloured nearly as in the plate, but the majority are altogether greyer.

CERIORNIS BLYTHII.

THE GREY-BELLIED TRAGOPAN.

Ceriornis blythi, *Jerdon.*

Vernacular Names.—[Hurr-hurrea, (Assamese); Soonsooria, (Golden bird?; Bengali); Gnu, (Angami Nága), *Nága Hills*].

VERY little is known of the habits or area of distribution of this species, which I, for one, have never seen alive.

In 1869 Dr. Jerdon, when in Assam, obtained a skin brought down to Sadiya at the head of the Assam Valley by some of the Mishmi tribes, in whose hills it is believed to occur.

Dr. Jerdon told me that an intelligent Assamese official, who was a good sportsman, assured him that he knew the bird well, and that it was found in winter at a comparatively low level in the extreme eastern portions of the Province. Several living examples were also, I learn, brought down about the same time, and one of these, which was living in Major Montagu's possession, was obtained by Dr. Jerdon for the Zoo, and duly sent home thither, where, for some time at any rate, it lived.

The latest *published* intelligence of this species is by Major Godwin-Austen, who says:—

"This bird is very difficult to obtain, and I failed to get the female, which has never yet been seen by any European. I heard them in the forest on the ascent to Khunho, but although I offered Rs. 20 for a bird, the Nágas only once succeeded in getting one; this, a male, was snared near the village of Viswemah, but thinking that I wanted the feathers only, the natives had, to my utter disgust, picked and eaten it. Another male was brought to Captain Butler, the Political Agent of the Nága Hills, when passing through the village of Jotsomali (also under the Burrail range), but it had been skinned so badly that it was falling all to pieces, and the most we could do was to save a few of the better pieces of the skin for the sake of the feathers. The Burrail range is the extreme western limit of this bird, and it has not been got even there west of the Peak of Paona, where the specimen in my collection was obtained. Its haunts are in the dense forests from 6,000 to 10,000 feet, and this renders it such a difficult bird to bag, and the only chance of shooting a specimen would be by coming upon it suddenly along a more open bit of ridge, or in one of the higher clearings. It was unknown to the Nágas of Asalu."

Mr. G. Damant now writes to me :—

" This bird is found on most of the high ranges in the Nága Hills, notably on the Burrail range, near the villages of Kohima, Khenomah and Mozemah.

" It is a permanent resident, and does not appear to migrate.

" It is found on the highest peaks (which attain an altitude of 9,000 feet in the Burrail range) and probably never descends to a lower elevation than 5,000 feet. It is said to breed in the month of April, and to lay three or four eggs.

" During the cold weather it is found at lower elevations than in the rains, as it descends as the mountain springs dry up.

" It appears to be generally distributed, but is not very common. Two live examples, now in my possession, eat worms and a kind of red berry very greedily. So far as I have observed, it has only one note resembling the syllable ' ak.'

" The Nágas catch these birds by laying a line of snares across a ravine which they are known to frequent, and then, with a large semi-circle of beaters, driving the birds down to them. They go as quietly as possible so as not to frighten the birds sufficiently to make them take flight, as, if not much alarmed, they prefer running."

We may conclude that it occurs throughout the higher ranges of the Assamese Hills, south of the Brahmaputra and eastwards of the Burrail range, and it probably extends, both eastwards and southwards of this, far into foreign territory.

THIS SPECIES in the breeding season, and when fully adult, exhibits the horn-like wattles, and also the pendant gular apron, characteristic of the genus, as one of my specimens shows.

Mr. Damant informs me that in life one of the males he sent me had horns three-quarters of an inch in length, and of a bright azure blue.

According to notes furnished to me by Dr. Jerdon, recorded from the type, an apparently adult male, before he skinned it, the chin and upper portion of the throat and the orbital region, which are bare, are yellow, here and there tinged greenish ; the bill greenish horny ; the legs and feet dull yellowish horny ; and the irides pale brown.

Not improbably these colours may vary according to sex, age, and season ; in the skin of a very fine male both lappets and face appear to have been blue, and the legs and feet were certainly red.

Dimensions of Adult Males from dried skins.—Length, 21·0 to 23·0 ; wings, 10·25 to 10·75 ; tarsus, 3·0 to 3·5 ; mid-toe, 2·3 to 2·5 ; its claw, straight, 0·8 to 0·9 ; spur, about 0·6 ; bill at front from base of frontal plumes, 1·0 to 1·1 ; corneous portion only, 0·55 ; from gape, 1·3 to 1·4 ; from end of bare gular skin to tip of lower mandible, 2·3 to 2·9.

One fine male before me has two spurs on the same level on one leg. I presume this to be a purely accidental monstrosity.

The *female* is considerably smaller.

Length, 18·0 to 20·0; wing, 8·5 to 9·0; tarsus, 2·9 to 3·1; mid-toe, 2·2; its claw, straight, 0·7; bill from frontal feathers straight to point, 0·98; from gape, 1·4.

THE PLATE.—A copy, I believe, of one of Mr. Wolff's, appears to represent tolerably the adult male. The general tone, however, of the mantle, rump and upper tail-coverts is not dark enough, and the red that enters largely into the colouration of these parts is really a rich maroon. I doubt also the correctness of the colouration of the face and gular skin.

When our plate was prepared, the female, recently procured for me, together with adult and young males, by Mr. G. Damant, C.S., was still unknown, and it is necessary, therefore, to describe her.

In the female, the ground of the entire mantle is black, each feather very *finely*, almost microscopically, freckled, chiefly along a broad central band with more or less rufous buff, and with one large, irregular zig-zaggy, somewhat arrowhead-shaped, spot towards the tip; in connection with this spot one or more irregular wavy bars generally go off right and left towards, or to the margins of feathers, which bars are often more ferruginous than the rest of the markings: these spots are most conspicuous on the interscapulary region, and almost disappear on the rump and upper tail-coverts, where the frecklings, on the other hand, extend over nearly the whole feather; the tail is blackish brown, thickly set with irregular, mottled, wavy transverse bars of ferruginous and ferruginous buff; the longest upper tail-coverts partake of the deep ferruginous tint of the tail markings; the primaries and secondaries much like the tail, but the ground a shade browner, and the markings less thickly set and nearly confined to the outer webs; the coverts and tertiaries partake of the characters of the mantle, as do the head and back of the neck, though in both these latter the markings are more bar-like and much less conspicuous.

The chin and upper throat are greyish creamy; the feathers margined with greyish brown, and with traces of a spot of this running in almost to the shaft, about half way up the feather; the rest of the front and sides of the neck and upper-breast in much the same style as the back of the neck and mantle, but the ground brown, the frecklings duller in colour and more diffuse, and the spot only indicated.

The rest of the breast and the abdomen a sort of greyish creamy, thickly set with freckly, imperfect bar-like brown markings, having a tendency to mark out and define plain patches or spots of the ground colour, towards the tips of the feathers, analogous to the spots on the upper surface.

The tibial plumes and some of the vent feathers regularly and closely barred hair-brown and dull buff; the lower tail-coverts brown, rather dark on the terminal one-third, where they are freckled and blotched with ferruginous buff, and with a more or less conspicuous oval, purer buff spot or drop just at the tip.

The lower surface of the quills and their greater lower coverts grey brown, with a few pale buff spots or markings on the inner webs at or towards their margins; the rest of the wing-lining deep brown, profusely spotted with ferruginous buff.

From the female of *melanocephalus* it is at once distinguished by the black and buff of the upper surface, so much richer and darker in tone; altogether different from the comparatively grey upper surface of *melanocephalus.* From the female of *satyra* it equally differs; on the upper surface it is blacker and less ferruginous; on the lower surface it is paler and wholly wants the warm ferruginous buff of that species, which in the present is replaced by greyish creamy. After they have once been seen, unlike the females of the *Gallophasis* section of the *Euplocami,* the females of the several species of *Ceriornis* can be as easily recognized as the males.

The young males show the transition from the female to the male plumage, just as do those of *melanocephalus* and *satyra.*

TWO OTHER species of this superb genus are known, *C. temmincki,* The Chinese Crimson Tragopan from Western and South-Western China, and *C. caboti,* the Buffy Tragopan, from South-Eastern China.

F. Waller, Lith. 18, Hatton Garden

1/3

ITHAGINIS CRUENTIS.

THE BLOOD PHEASANT.

Ithagenes cruentus, *Hardwicke.*

Vernacular Names.—[Chilmeah, Chilmé (Parbutteah), Srimen, Selmung (Bhutia), *Nepal;* Same, Semo, (Bhutia), Soomong pho (Lepcha), *Sikhim.*]

THE exact area of distribution of this species is still quite unknown. According to Hodgson's notes it is found in the higher regions, far north of the Great Valley, throughout the whole length of Nepal, but I doubt if it really extends to the western portions, as it is unknown to the hunters of even the extreme eastern portions of Upper Kumaun. It occurs undoubtedly throughout native Sikhim, and occurs in the western portions of Bhután. It very likely extends in suitable localities much further east.

Northwards it is replaced in Eastern Thibet and Sechuen by *I. geoffroyi*, and further north again by *I. sinensis*, both nearly allied and similar species.

I HAVE never myself had the luck to shoot the Blood Pheasant, but the following unpublished notes of Mr. Hodgson give some idea of the bird's habits :—

"This species is common in Nepal in flocks of 20 to 30, in the same situations as the Moonal ; that is to say in the higher forests and in the immediate neighbourhood of the snow, even outside though always near the forests.

"They greatly affect the clumps of Mountain Bamboo, and feed about on the ground amongst these much like domestic fowls, turning over the leaves and grasses with their feet, scratching about in the ground, and picking up insects, grass, seeds, grain, and wild fruits.

"They do not eat the bulbous roots of which the Moonal is so fond. On any alarm the whole flock utter a sharp alarm-note (ship, ship) and scuttle away.

"In the winter the birds come southward a little, but never approach the Great Valley. Numbers are caught in November and December, and in their own haunts they are by no means rare. Packs are often seen consisting of as many as 70 to 100 birds. They ascend and descend with the snow, and are easily captured, being fearless and stupid. They prefer somewhat inaccessible places. Their flight is short and feeble.

"Adult males have often three spurs on each leg, and natives say that they are sometimes found with as many as five."

Dr. Hooker remarks:—

"This, the boldest of the Alpine birds of its kind, frequents the mountain ranges of Eastern Nepal and Sikhim at an elevation varying from 10,000 to 14,000 feet, and is very abundant in many of the valleys among the forests of pine (*Abies webbiana*) and juniper. It seldom or never crows, but emits a weak cackling noise. When put up, it takes a very short flight, and then runs to shelter. During winter it appears to burrow under or in holes amongst the snow; for I have snared it in January in regions thickly covered with snow, at an altitude of 12,000 feet. I have seen the young in May. The principal food of the bird consists of the tops of the pine and juniper in spring, and the berries of the latter in autumn and winter; its flesh has always a very strong flavour, and is moreover uncommonly tough; it, however, was the only bird I obtained at those great elevations in tolerable abundance for food, and that not very frequently. The Bhutias say that it acquires an additional spur every year; certain it is that they are more numerous than in any other bird, and that they are not alike on both legs. I could not discover the cause of this difference; neither could I learn if they were produced at different times. I believe that five on one leg, and four on the other, is the greatest number I have observed."

Dr. Jerdon, writing to Mr. Elliot, said:—"The only time that I have myself seen the *Ithagenes* was in September 1868, on a trip to the Singhaleela Range, west of Darjeeling. This is a lofty spur that runs south from Kinchinjunga, ending in Mount Tonglo, 10,000 feet. At about 12,000 to 13,000 feet a covey of these beautiful birds crossed the mountain-path I was ascending; and quickly calling for my gun, I knocked one or two over on the ground. Only one bird rose on the wing after I fired; and it settled down again almost immediately, the rest escaping by running into the underwood in the forest. A native Shikári followed them up, and succeeded in securing three or four more of the family. The young were nearly half-grown, and the cock birds were clothed in the adult male plumage, not so bright or well-marked of course as an old bird. The bill of the female is dull reddish at tip, and chestnut at the base; the nude orbital skin in the male rich blood-red, and the irides red brown, the bill being dusky or black at the tip. I see in Hodgson's drawing of this bird that the bill of the female is rightly given red. I could not notice exactly how the tails were held, except that they were certainly raised whilst running. The food of those examined consisted entirely of vegetable matter. The skins of this beautiful bird previously brought into Darjeeling have all been procured at a considerable distance in the interior of Sikhim; and I was rather

surprised to find them here in such a damp climate and so near the plains; but as the Singhaleela spur is higher than any other range running south, I fancy they have gradually spread along the ridge as far as it continued suitably elavated."

Hodgson remarks of live birds that he had :—"They have an erect Galline carriage, but the tail is carried low and descending."

Mr. William Blanford says, in his notes on the Zoology of Sikhim :—

"Not rare on the Chola Range, but more common in the pine forests of the Láchúng Valley. I shot it only in the latter, in September, in flocks of 10 to 15 birds, males and females, in about equal proportions, and the young birds of the year in the same plumage as the old ones, but easily distinguished by the absence of spurs on their legs. The old birds had recently moulted, and their tails were not full grown.

"All that I saw were in the pine forests around Yeomatong, where they were tolerably abundant. They rarely take flight even when fired at, but run away and often take refuge on branches of trees. I have shot five or six out of one flock by following them up; they usually escape up hill, and if, as frequently takes place, the flock has been scattered, after a few minutes they commence calling with a peculiar long cry, something like the squeal of a kite. The only other note I heard was a short monosyllabic note of alarm; I have heard a bird utter this when sitting on a branch within twenty yards of me.

"In their crops I found small fruits, leaves, seeds, and in one instance what appeared to me to be the spore cases of a moss; there were no leaves or berries of juniper, and the birds were excellent eating. We did not notice the unpleasant flavour mentioned by Hooker, probably because better food is abundant at the season when we shot our birds, and they consequently do not then feed upon pine or juniper."

OF THEIR nidification nothing is accurately known. Mr. Hodgson says in his notes, obviously on the faith of native informants :—

"The nest is placed on the ground amongst the grass and bushes, a loose nest of grass and leaves. The eggs, 10 to 12 in number, are laid towards the end of April and in May, and the young are ready to fly in July.

"Only the mother feeds and cares for the young."

THE FOLLOWING are dimensions recorded in the flesh by Mr Hodgson :—

Adult Males.—Length, 17·75 to 19·5; expanse, 22·5 to 26·0; wing, 8·0 to 9·0; tail, 6·5 to 7·0; tarsus, 2·75 to 3·0; bill, 0·81 to 0·87. Weight, 1lb 1 oz. to 1lb 4 ozs.

Cere, gape, and palate intense coral red to crimson; orbital skin scarlet to orange vermilion; bill black; iris red brown; in others pale clear hazel; legs and spurs like the cere, crimson; claws dusky.

Female.—Length, 16·5 to 17·0; expanse, 21·0 to 23·0; wing, 7·62; tail, 5·5 to 6·0; tarsus, 2·6 to 2·75; bill, 0·8 to 0·9. Weight, 12 ozs. to 1℔ 1 oz.

Bill black; cere and orbital skin yellow carmine; legs intense carmine; claws dusky; iris brown.

Dr. Jerdon is apparently wrong in his remark, above quoted, that the bill of the adult female is red, for Mr. Hodgson says:—"One specimen that I obtained in September, and which was by dissection a female, showed the anomaly of a deep coraline red bill. Later, I got other specimens showing the same peculiarity; all these had the cheeks fleshy grey. It is evident to me that the red bill is a sign of nonage, and that it becomes gradually black."

It is just possible, however, that the change in the colour of the bill may be seasonal; anyhow all Mr. Hodgson's females obtained in April and May had black bills.

Very young birds have the bill, legs, and cere a dirty grey, and the eye piece fleshy grey, with a faint crimson tinge.

The spurs of the male are not assumed the first year I think, as I have received some specimens, males, in perfect plumage apparently, exhibiting no trace of any spur. I have never seen more than four spurs on one leg in any specimen.

THE PLATE conveys, I believe, a good idea of the species.

F. Waller Chromo-Lith. 18. Hatton Garden London.

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PUCRASIA MACROLOPHA.

THE KOKLASS.

Pucrasia macrolopha, *Lesson.*

Vernacular Names.—[Phokrass, *Bhote Parganas of Kumaun* and *Garhwál;* Koklass, Kokla, *Almora to Simla;* Koak, (Pahári Hindi,) *Kullu, Mandi;* Plas, *Kashmir.*]

KOKLASS, which it is now usual to treat as belonging to three distinct species, extend in the Himalayas from the central northern, and north-western portions of Nepal to Kafiristan.

Of these three supposed species I shall say more when dealing with *P. nipalensis.* At present we are only concerned with typical *Pucrasia macrolopha,* which may be said to extend from the centre of Kumaun, or at any rate the eastern portions of British Garhwál, as far as the westernmost portions of Kashmir, though westwards of Simla it is comparatively scarce.

OF ALL OUR Hill Pheasants, the Koklass is the best eating, and affords the best sport. Other people's experience appears to be different, as will be seen from passages that I shall quote further on, but I have always found them in the latter part of the autumn in large coveys, and not unfrequently several coveys on one hill side. I have found them lay well, and rise and go off superbly, and I would rather have a good day after Koklass in the middle of November, in some little-wooded saucer-like valley or depression at 7,000 or 8,000 feet in the Himalayas, where too or three coveys have been marked by one's shikáris, than after any other bird in any other place.

The spot for Koklass is either some depression, such as I have mentioned, or some place in a gorge where a horizontal plateau is thrown out inside the gorge.

There is an oval cup-shaped valley near the top of Nagtiber behind Mussooree, which used, in old days, to be a sure find for Koklass in October and November. In and about this, I, one November morning, put up no less than three coveys, aggregating, I suppose, over twenty birds; the young ones looking quite as large, though not weighing quite so much as the old ones. I killed five within a circle of a hundred yards, and I then, during the rest of the day, got seven more about the slopes of that hill, besides two Moonal, a Cheer, a Woodcock, several

Hill Partridges (*A. torqueola*), four Chikore (of which I knocked three over on the ground with one shot as they scuttled away) on a bare grassy spur, on which a few fields had been, and lastly a Barking Deer.

With other Pheasants, except perhaps the Cheer, it has always seemed to me so much more a matter of chance; with Koklass, if your men have marked them one day, you will find them next day, at the *same* hour (for they move up and down the hill a great deal during the day), in precisely the same spot, if they have not been previously molested. The birds, though they separate in all directions, do not go far, and do not run much after they alight.

And here I would remark that, unless you are a man of iron, such as my old friend Wilson was, able to walk 40 or 50 miles up and down without fatigue, and able to go up hill just as well as down hill, it is all nonsense going Pheasant-shooting in the Himalayas without the necessary aids and in the proper manner.

You must have good dogs (small cockers are best), thoroughly under control, who will work exactly to command, and obey the whistle, and you must have a number of intelligent hill men, something of sportsmen themselves, to search out the shooting grounds, and when you are shooting, *mark* the birds that get away from well-chosen posts. I used to have four dogs and over a dozen men.

Lastly, you must go in for small game as your object, and not humbug after big game. If a Kakur jumps up in the grass before you, roll him over with shot. Have a rifle along with you, and if in beating a gloomy ravine for Hill Partridges an old Sarrow, or a precipitous "*dang*" or cliff for Cheer, a Gooral or two break, do your best with them, and if when high up after Moonal or Tragopan or Snow Cock, a Tahr or Burrel gives a chance, by all means take it. But if you really want to make bags of Pheasants and the like, you must make them your object. Of course, too, you must get right away from hill stations and avoid lines on which other people have been recently shooting, but the hills are so vast and so very few men even to this day go in in earnest for small game, or can get leave in the latter part of October and November, which is the real time for Pheasants, that this is easy.

I continually hear people abusing the shooting in the hills, and declaring that it is impossible to get more than two or three brace of birds in a day, but the fact simply is, that these sportsmen have not yet learnt their trade. Go to suitable localities, in the proper season, with good dogs and men, and if you are a fair walker and a fair shot, you may make as grand and varied bags of Pheasants and Partridges of sorts, Woodcock, and solitary Snipe in the Himalayas as in any place in the world where game is not artificially protected; and all the while you will be

enjoying the finest climate, and will be surrounded by the most magnificent scenery.

Wilson says of the Koklass :—

"This is another forest Pheasant common to the whole of the wooded regions, from an elevation of about 4,000 feet to nearly the extreme limits of forest, but is most abundant in the lower and intermediate ranges. In the lower ranges its favourite haunts are in wooded ravines; but it is found on nearly all hill sides which are covered with trees or bushes, from the summit of the ridges to about half way down. Further in the interior it is found scattered in all parts, from near the foot of the hills to the top, or as far as the forest reaches, seeming most partial to the deep sloping forests composed of oak, chestnut, and morenda pine, with box, yew, and other trees intermingled, and a thick underwood of ringal.

"The Koklass is of a rather retired and solitary disposition. It is generally found singly or in pairs; and, except the brood of young birds, which keep pretty well collected till near the end of winter, they seldom congregate much together. When numerous, several are often put up at no great distance from each other, as if they were members of one lot; but when more thinly scattered, it is seldom that more than two old birds are found together; and at whatever season, when one is found, its mate may, almost to a certainty, be found somewhere near. This would lead one to imagine that many pairs do not separate after the business of incubation is over, but keep paired for several successive years.

"In forests where there is little grass or underwood, they get up as soon as aware of the approach of any one near, or run quickly along the ground to some distance; but where there is much cover, they lie very close and will not get up till forced by dogs or beaters. When put up by dogs they often fly up into a tree close by, which they rarely do when flushed by beaters or the sportsman himself, then flying a long way and generally alighting on the ground. Their flight is rapid in the extreme, and after a few whirrs, they sometimes shoot down like lightning. They sometimes utter a few low chuckles before getting up, and rise sometimes with a low screeching chatter, and sometimes silently. The males often crow at daybreak, and occasionally at all hours.

"In the remote forests of the interior, on the report of a gun, all which are within half a mile or so, will often crow after each report; they also often crow after a clap of thunder or any loud and sudden noise; this peculiarity seems to be confined to those in dark shady woods in the interior, as I never noticed it on the lower hills.

"The Koklass feeds principally on leaves and buds; it also eats roots, grubs, acorns, seeds, and berries, moss and flowers. It will not readily eat grain, and is more difficult to rear in

confinement than the Jewar or Moonal. It roosts in trees generally, but at times on low bushes or on the ground.

"In the lower regions this bird should be sought for from about the middle of the hill upwards; oak forests, where the ground is rocky and uneven, are the most likely places to find it. Dogs are requisite to ensure sport, and are much to be preferred to beaters, as birds which, if flushed by the latter, would go far out of all reach, will often fly into the trees close above the dogs, and may be approached quite close, seeming to pay more attention to the movements of these than to the presence of the sportsman. In the interior they will be found with the Moonal in all forests, but always keep in the wood, and do not, like it, resort to the borders; they are worth shooting, if but for the table, as the flesh is perhaps the best of the Hill Pheasants."

Captain Baldwin has some pertinent remarks on this species, though he, of course, has only shot them in summer, *viz.*, in the breeding season. He says:—"I have shot the Koklass out of the same cover as the Moonal, at an elevation of 13,000 feet. It is especially fond of cypress and oak forests, and is generally found singly or in pairs. I have never seen more than four full-grown birds together at a time.

"A sportsman often flushes the Koklass when on the steep grassy slopes looking for Gooral, especially if there are oak trees in the vicinity. I have been startled by the bird, which, when rising, makes a loud croaking noise. The Koklass is a particularly swift flyer; more so, I am inclined to think, than any other of the Himalayan Pheasants; it darts down the side of the mountains with astonishing rapidity, and requires, when well on the wing, an experienced shot to cut it over.

"The sportsman, on awakening in the early morning, when encamped on the uplands to hunt *Thar*, will hear the harsh '*kok-kok pokrass*' cry of this bird on all sides, and *Pucrasia macrolopha* when heralding the dawn of day in this manner is generally sitting on one of the lower boughs of a cypress tree.

"It is in the habit of hunting for food and scratching about in search of insects among patches of rhododendron, and I have observed it so occupied in close company with the Moonal. I do not think that this bird approaches villages and habitations like the Kalij, nor have I ever shot it out of standing corn. They will crow three or four together, on being startled by a distant gun shot, a stone rolling down, or a clap of thunder.

"Two brace is the most that I have ever shot in a day, though, generally speaking, after driving a valley with beaters, a few brace of Koklass are included among the slain."

THE KOKLASS breeds throughout the Himalayas in all well-wooded localities within the limits above indicated. The bird may be *shot* at any elevation from 3,000 to 14,000 feet, but it

only *nests*, according to *my* experience, from 6,000 to 9,000 feet. The breeding time lasts from the middle of April until the middle of June, according to locality and season, but the majority lay, in normal years, during the first-half of May.

This species is, I think, unquestionably monogamous, and the birds, I suspect, commonly pair for life.

Little or no nest is made ; a circular depression is scratched in the forest, in a thick shelter of undergrowth or under some huge root or overhanging rock, and in this, unlined, or but sparsely lined with leaves, moss, or dry grass, or all three, the eggs, from five to nine in number, are laid.

Mr. Wilson remarked, many years ago, that "the female lays seven eggs, nearly resembling those of the Moonal in colour. They are hatched about the middle or end of May. She makes her nest under the shelter of an overhanging tuft of grass, or in a corner at the foot of a tree, and sometimes in the hollow of a decayed trunk."

Now writing to me from Garhwál, he says :—

"The Koklass breeds at elevations of from 5,000 to 10,000 or 11,000 feet, in coppices and forests with some underwood. The nest is a hole scraped in the ground, and always sheltered under a tuft of grass, or thick bush, or overhanging stone, and it is sometimes made in the hollow at the foot of a big tree or old trunk. As a rule, the number of eggs seems to be nine. It begins to lay early in May, but some not till the end of the month. Both birds are generally found with the young brood. The male chicks of this and the Kalij get their proper plumage the first year. By the middle of September they are pretty well grown."

The eggs are oval, more or less pointed towards the small end, and vary a good deal in size and shape, as in the case of the Pea-Fowl, some being much broader, and others more elongated ovals. None that I have seen have been at all of the ovoido-conoidal shape of the *Francolins*, and the Common Pheasant (*P. colchicus*). The shape is more that of the true Partridge, *Galloperdix* and *Gallophasis*. The ground colour is a rich pale buff, and the eggs are, some densely and thickly speckled and spotted, and others boldly but thinly blotched and splashed with deep brownish red, which is dullest in the speckled, and brightest and deepest in the blotched, varieties.

The eggs of these two types vary more in appearance than might perhaps be supposed from the above description. One egg will have the whole ground as thickly speckled over as possible with minute dots, not one of them much bigger than a pin's point, and so closely set that a pin's head could nowhere be placed between them ; while another egg will have at most a dozen bold blotches, and three or four times that number of good-sized spots, leaving comparatively large spaces of ground colour utterly unspotted. It is impossible to conceive a richer

brownish red than that displayed in some of these blotches, and eggs of this species of the boldly-coloured type are, I think, the handsomest of all our Indian game birds' eggs. Taken as a body, they are very like miniature Moonal eggs, and they also remind one much of those of the European Black Grouse.

The eggs vary very much in size, *viz.*, from 1·85 to 2·29 in length, and from 1·39 to 1·57 in breadth; but the average of fifty eggs is 2·08 by 1·47.

MALES MEASURE.—Length, 23 to 25·5; expanse, 29·0 to 30·5; wing, 9·25 to 10·0; tail from vent, 9·3 to 11·25; tarsus, 2·65 to 2·85; bill from gape, 1·3 to 1·52. Weight, 2 lbs. 2 ozs. to 2 lbs. 14 ozs.

The bill black or blackish dusky; the irides dark brown; the legs and feet varying, in some purplish horny, in some ashy, with a slight fleshy tinge; in some greyish horny, a pale horny blue in front and dingy brown behind.

Females—Length, 20·75 to 22·0; expanse, 27·5 to 28·5; wing, 8·2 to 8·9; tail from vent, 7·2 to 8·5; tarsus, 2·47 to 2·55; bill from gape, 1·38 to 1·46. Weight, 1 lb. 10 oz. to 2 lbs.

The bill dark horny; the irides dark brown; the legs and feet pale plumbeous, or horny grey.

THE PLATE does not represent a typical *macrolopha*. The black central stripes to the feathers of the upper back, back and sides of neck, and sides of breast and body, are not in typical *macrolopha* half the width there shown, while on the rump and upper tail-coverts they are almost entirely, at times wholly, wanting in this form. Our plate was drawn from a specimen intermediate between *macrolopha* and *nipalensis*, but nearest the former. As far as I can judge, all three supposed species are inseparably connected by an unbroken series of intermediate forms.

F. Waller, Chromo-Lith. 18, Hatton Garden, London.

4

PUCRASIA NIPALENSIS

THE NEPAL KOKLASS.

Pucrasia nipalensis, *Gould.*

Vernacular Names.—[Pokrass, *Nepal.*]

AS I have already noticed, when speaking of the previous species, many authorities consider the Koklass of the Himalayas referable to three distinct species.

Whether these three forms should be considered distinct species or only treated as varieties or local races, is of no essential significance. All classification is purely a matter of convenience; nature lays down no hard and fast lines, and those that *we* profess to lay down, when we pretend to declare that this is merely a race, that a distinct species, and so on, are purely arbitrary and dependent on personal idiosyncracies.

So far as I myself am concerned, I incline to consider the whole of the Koklass, which are as yet known to occur in our hills, as one and the same species, varying much according to localities, and somewhat also, as regards individuals, even in the same locality, but all so running one into the other, and all accompanied by so many intermediate forms, that it is desirable to treat all as one species.

Others, equally competent to judge, think that we have three distinct species, and it is therefore desirable to recognize their differences, and explain how typical examples of each form are distinguished.

In *macrolopha*, the chestnut of the lower throat and middle of breast, &c., does not extend at all *round* the neck; the feathers of the back and sides of the neck, interscapulary region, sides of the breast, and body and flanks, are grey, with narrow, central black stripes.

In *nipalensis* (I speak on the strength of several specimens recently procured for me in Nepal by Dr. Scully), all these feathers are black, with only narrow grey edges, many of them, especially on the sides and flanks, with narrow reddish shaft lines. In this species or race, also, the red does not go round the neck.

In *castanea*, the feathers of the flanks are *apparently* much more like these of *nipalensis*, but there is a much greater extent of chestnut on the breast and belly, and the chestnut goes all round the base of the neck.

In *nipalensis*, the whole of the feathers of the lower back, rump, and upper tail-coverts are broadly centred with black, but in *macrolopha* they are *mostly* grey, paling towards the margins, and this appears to be the case also in *castanea*.

I have never yet been able to obtain any typical specimens of the so-called *castanea* (I retain Mr. Gould's name for reasons fully explained, S. F., VII, 124).

The bird figured as such by Mr. Elliot is not, in my opinion, the true *castanea*, but an intermediate form. No doubt Mr. Elliot says that he purchased the type of *P. castanea* from Mr. Gould, but he is mistaken, since Mr. Gould's types were specimens collected in Kafiristan by Griffiths, at that time, and probably still, in the Indian Museum.

Again, neither the bird figured by ourselves nor that figured by Mr. Elliot as *macrolopha* is what I consider typical *macrolopha*, of which our Museum contains a very large series. Both represent forms more or less intermediate between *macrolopha* and *nipalensis*. Mr. Gould's figures of these two species are fairly illustrative of them, but even these by no means represent the most extreme or thoroughly characteristic examples that might have been selected to exhibit the differences of the two races. But they show these better than ours do.

No doubt these races grade into each other, and it is therefore most difficult to define their exact range, but, as at present informed, true *macrolopha* is the species that spreads from Central Kashmir to throughout most, if not the whole, of British Garhwál and perhaps part of Kumaun.

Typical *nipalensis* is apparently confined to the northern portions of the western-half of Nepal (I have never been able to hear of any Koklass in Eastern Nepal, or Sikhim, or anywhere in the Himalayas further east) ; but some of the Kumaun specimens (and I have been *told* some from the extreme east of British Garhwál) exhibit more or less of the characteristics of *nipalensis*.

Castanea, again, in its typical form is *said* to be confined to Yasin Mastuj, Chitral, Swat and Kafiristan, but this rests on absolutely no authority. Certainly specimens obtained in the westernmost portions of Kashmir show a leaning towards this form, and may prove to be identical with the specimens on which the species was founded.

Of *castanea* we have given no figure ; I have never yet succeeded in obtaining a typical specimen, and those Western Kashmir specimens that I have seen are certainly not distinct enough to need figuring. Nothing, moreover, is really known of its distribution, habits, or the like.

Macrolopha and *nipalensis*, though they undoubtedly, in my opinion, locally grade into each other, are, I find, when typical examples of each are selected, fairly distinguishable ; and we have therefore figured both, though unfortunately not

a typical example of the former. True *castanea* may be equally distinct, but the Western Kashmir specimens, which probably are only verging towards *castanea*, certainly are not so.

Nothing is known of the habits of the Nepal Koklass. No European has ever shot it or seen it in a wild state. All my specimens I owe to Dr. Scully, who writes thus in regard to them :—

"In the beginning of 1877 Mr. Hume urged me to procure specimens of the Nepal Koklass, in order that the question of its identity with, or distinctness from, *macrolopha* might be definitely settled. This proved no easy task, as the bird, though not uncommon in the western portion of the Nepal Himalaya, does not occur in any part of the hills so far to the east as the Valley of Nepal. However, after waiting for some six or seven months, I received the seven birds whose measurements are recorded further on, from Jumla in Western Nepal, through the kindness of my friend General Umber Jung, a nephew of the late Sir Jung Bahádur. Three other specimens were subsequently seen in confinement in the valley, and these also had been brought from Jumla.

"Unfortunately I can give no details about the habits of this Pheasant from personal observation ; it is said to be plentiful about Jumla, where it is found not far from the snows. In confinement the birds become very tame, and seem to prefer green leaves and shoots, &c., to grain for food.

"There can be no doubt that *Pucrasia nipalensis* is thoroughly distinct from *P. macrolopha;* the former is a smaller bird, darker and much more richly coloured than the common Koklass. Although Mr. Gould has said all that is necessary on this point, it may be worth while again to draw attention to the characters by which the two species may be at once distinguished.

"In *macrolopha* the male bird has the body above the sides of neck and breast and the flanks, light ashy, with a narrow black stripe down the centre of the feathers, including the shaft. In *nipalensis* the feathers of the corresponding parts are velvet black, narrowly fringed at their margins with grey, while the shafts of the feathers are either white with a line of chestnut on each side, or wholly chestnut."

"The female of *P. nipalensis*, besides being smaller and darker than the hen of *macrolopha*, has the colours much more intense, and with a greater admixture of rufous ; and the tail feathers are nearly all chestnut."

THE FOLLOWING are dimensions, &c., recorded, mostly in the flesh, of this species or race by Dr. Scully :—

Males.—Length, 23·0 to 25·0 ? ; expanse, 27·5 to 29·0 ; wing, 8·3 to 9·1 ; tail from vent, 9·0 to 10·0 ? ; tarsus, 2·5 to 2·7 ; bill from gape, 1·2 to 1·4; spur, 0·3 to 0·63 ; crest, 3·5. Weight, 1℔. 15 ozs. to 2 ℔s. 2 ozs.

Females.—Length, 21·0 to 22·0 ? ; expanse, 27·0 to 28·0 ; wing, 8·1 to 8·6 ; tail from vent, 7·0 to 8·0 ? ; tarsus, 2·2 to 2·5 ; bill from gape, 1·15 to 1·25. Weight, 1·8 oz. to 1·14 oz.

The weights are probably too small, as wild birds always fall off much in confinement.

The irides were deep brown ; the bill black or dusky, greyish or yellowish horny at tip of upper and base of lower mandible, and sometimes over a considerable portion of this latter. The legs and feet varied from dingy plumbeous, bluish dusky or bluish grey to dingy lavender horny ; the claws blackish to dusky horny ; orbits clad with feathers ; the lower eyelid whitish fleshy.

THE PLATE, though taken from a Nepal specimen, hardly sufficiently brings out the characteristic features of the species, and the lower parts of the male are wrongly coloured, being really a rich deep chestnut.

OUTSIDE OUR limits at least two species of Koklass are known—one, *P. xanthospila*, from the north-east of China and Eastern Thibet, and the other, *P. darwini*, from South-Eastern China.

F. Waller. Chromo Lith. 18, Hatton Garden, London.

1/3

PHASIANUS WALLICHII

THE CHEER.

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Phasianus wallichi, *Hardwicke.*

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Vernacular Names.—[Kahir, Chihir, *Nepal;* Cheer, *Kumaun, Garhwál, and further west;* Bunchil, Boinchil, Herril, *Hills north of Mussooree;* Chummun, Chaman, *Chamba, Kullu,* &c.]

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JERDON and others following him talk loosely of this species "inhabiting the North-Western Himalayas and extending into Nepal, where, however, it is not so common as further west."

It does just occur in the very westernmost portions of Nepal, and that is all, while to the North-Western Himalayas, by which I understand Hazára and Kashmir, it does not, I believe, extend at all.

Its range is very limited. In Nepal it is, I believe, confined to the Hills west of the Dewa.

It occurs and is plentiful in Kumaun, British Garhwál, Native ditto or Teree, in the Hill Parganas (Jaunsár Báwar,) of the Dehra Dhún district, in Jubal, Taroche and others of these small Hill states, Bussahir, Mandi, Suket, Kullu and Kángra. It is not uncommon about Chamba, in the upper valley of the Ravi, but I can obtain no reliable information of its occurrence in Kashmir,

I ought to notice that there are local differences in the colouration of the neck, breast, sides, back and rump in the Cheer, precisely analogous to, though doubtless not quite so marked as those which, in the case of the Koklass, have led to the formation of three so-called species. But in the case of the Cheer, perhaps owing to their comparative scarcity in museums in Europe, no one fortunately has contended for the existence of more than one species.

THE CHEER is extremely locally distributed, and seems to me very capricious in its choice of habitations; on one side of a river you meet with plenty in suitable spots; on the other side you may search fifty square miles of most likely-looking country and never see one.

From six to seven thousand feet is the elevation at which, in October, they are most common, but in winter and spring they go lower, and some even breed lower, and in summer they *may* be met with up to at least ten thousand feet (I myself killed a pair of old ones late in June at fully this elevation), and

probably higher. Of course they are birds of the outer or wooded Hills, and once you cross a high snowy ridge, that effectually arrests the clouds of the monsoon, into dry, more or less treeless regions, like Lahoul, Spiti and Ladákh, you lose the Cheer and all the Pheasants but the Snow Cocks. They are all more or less birds of the forest, and all belong to the zone of abundant rainfall.

The best places in which to find Cheer are the Dangs or precipitous places, so common in many parts of the interior; not vast bare cliffs, but a whole congeries of little cliffs one above the other, each perhaps from 15 to 30 feet high, broken up by ledges, on which a man could barely walk, but thickly set with grass and bushes, and out of which grow up stunted trees, and from which hang down curious skeins of grey roots and mighty garlands of creepers.

If the hill above be thinly wooded, and on some plateau below there are a good number of Millet and Princes'-feather fields, you are, in a Cheer district, next to certain in the autumn to find a covey on the upper ledges of such a spot about ten o'clock in the morning.

Then what a morning's sport you may have. You get on some knoll or spur commanding the lower portions of such a series of cliffflets, where you will be clear of the stones that the dogs and men inevitably dislodge. The dogs are put in at the very top, a few of the men climbing with them on such ledges as are accessible; the stones rattle down fast, a pahári slips, shouts, and saves himself by clinging to a branch; all the dogs bark, every man looking on shouts out a different piece of advice if the slip was serious, or a separate gibe, if it was trivial, for the benefit of the slipper; all this comes down to you three or four hundred feet below, a confused babel; you scream out "silence," then a sharp yelp, a volley of screeching chuckles, you see a dark object shoot out from the face of the upper cliffs, a moment, and it suddenly contracts in size, and the next hurtles by you, like a falling thunderbolt, and if you do *not* miss it, it is quite certain that it is not the first time you have shot Cheer.

But whether hit or missed, there is no time to enquire now; good men are below to mark every bird that comes down, dead or alive, or half-and-half.

Another and another of these animated projectiles pass you in their downward rush, some out of shot, some so close that it is impossible to fire, and very often three, four, five in such rapid succession that even with two doubles, in the old muzzle-loading times, it was impossible to fire quick enough.

Twelve or more perhaps have been counted, the dogs and men have worked down to the level at which you stand, when you catch a glimpse, scuttling round the base of the knoll, of the old cock, going at railroad pace with head down and tail

straight out, and you arrest his career (if you are sharp enough) then and there.

Then comes the work below; the dogs are called close to heel, and following the shouted directions of the markers, you move about here and there, now finding a dead bird, now having a wounded one brought you by a dog, and now getting nearly knocked down by one whose tail absolutely brushes your face as it rises under your feet from the centre of a small patch of cover, which, on the persistent outcries of the markers, you have been vainly hunting through, backwards and forwards, for the ten previous minutes.

But you do not account for all, unless you are a better shot than I ever yet saw, though in these days of breech-loaders far fewer ought to escape—some wounded birds, and many of the unwounded will have given leg bail, and the distances they will then go is surprising. I have, quite by accident, recovered by a dog pouncing on it a Cheer, with pinion broken, the blood still fresh on it, fully three miles down a valley at the upper part of which two or three hours previously I had had a beat.

The sport is very exhilarating, but you are generally lower down than in Koklass shooting; you are more closed in, the air is not so fresh and bright, there are no superb wide-reaching views, changing as you move; a glimpse of the snows is rarely to be caught; you have no magnificent forest about you, and when brought to bag, your bird is very poor eating compared with Koklass or Woodcock.

The force with which Cheer descend is almost incredible. Other Pheasants in descending keep the wings a little open; these birds pass one at such a fearful pace that it is impossible to be certain, but it always appeared to me that Cheer quite closed their wings, and I attribute their power to do this to their enormous tails sufficing to guide them. When within a hundred feet, I speak by guess, of the level at which they intend to light, suddenly out go the wings, the tail is spread to its fullest expanse, the bird looks double the size it did a second before, and sweeps off in graceful curves right or left, shortly dropping suddenly, almost as if shot, into some patch of low cover. If no shots have been fired, you may walk straight down, and ten to one find him exactly where you marked him.

At times you get them on the hill sides, where the trees are thin, but there is no great sport to be got there; the whole covey is scattered over an endless distance, you must make a line, the birds *will* get up in front of any one but the gunner, and run down hill in a most provoking manner; if you get two brace in such a situation after five or six hours' fagging you may be well pleased, unless the covey happens to have an antipathy to dogs, as they occasionally seem to have in out-of-the-way places. Then almost every bird that is found by

these flies straight up into the nearest tree, and thence, standing almost on tip-toe on some horizontal bough, with feathers erected and tail spread, chuckles or crows, or whatever you like to call it, at the barking and yelping Cockers below, till you walk up and (tell it not to your friends when you return to camp) solemnly pot him or her then and there.

I was once nearly killed by a Cheer. I was standing in a rather awkward place, the extreme outer edge of a plateau jutting out for 20 or 30 yards near the base of a patch of precipitous ground; behind me was a sheer fall of about forty feet; a Cheer was flushed above, it was coming right for me. I let off the gun somehow, and almost before it seemed well off, my gun was dashed aside and I got a blow on the face that made my nose bleed, and knocked me over the precipice, to the bottom of which my gun fell, as should I also, had not the two men squatting at my feet seized my legs. Yet this bird, as the state of the body proved, must have been at least 30 yards from me when the shot struck it, and it was stone dead when I had sufficiently recovered myself to think of it.

But enough of personal reminiscences; we have a far better account of this species than I can pretend to give in my friend Mr. Wilson's narrative. He says:—

"This species is an inhabitant of the lower and intermediate ranges, seldom found at very high elevations, and never approaching the limits of forest.

"Though far from being rare, fewer perhaps are met with than of any other kind unless it is particularly sought for, always excepting the Jewar. The reason of this may be that the general character of the ground where they resort is not so inviting in appearance to the sportsman as other places; besides, they are everywhere confined to particular localities, and are not, like the rest, scattered indiscriminately over almost every part of the regions they inhabit. Their haunts are on grassy hills with a scattered forest of oak and small patches of underwood, hills covered with the common pine, near the sites of deserted villages, old cow-sheds, and the long grass amongst precipices and broken ground.

"They are seldom found on hills entirely destitute of trees or jungles, or in the opposite extreme of deep shady forest; in the lower ranges they keep near the top of the hill or about the middle, and are seldom found in the valleys or deep ravines. Further in the interior they are generally low down, often in the immediate vicinity of the villages, except in the breeding-season, when each pair seeks a spot to perform the business of incubation; they congregate in flocks of from five or six to ten or fifteen, and seldom more than two or three lots inhabit the same hill.

"They wander a good deal about the particular hill they are located on, but not beyond certain boundaries, remaining

about one spot for several days or weeks, and then shifting to another, but never entirely abandoning the place, and year after year they may, to a certainty, be found in some quarter of it.

"During the day, unless dark and cloudy, they keep concealed in the grass and bushes, coming out morning and evening to feed. When come upon suddenly while out, they run off quickly in different directions, and conceal themselves in the nearest cover, and seldom more than one or two get on the wing. They run very fast, and if the ground is open and no cover near, many will run two or three hundred yards in preference to getting up.

"After concealing themselves they lie very close, and are flushed within a few yards. There is, perhaps, no bird of its size which is so difficult to find after the flock have been disturbed and they have concealed themselves; where the grass is very long, even if marked down, without a good dog it is often impossible to flush them, and even with the assistance of the best dogs not one-half will be found a second time. A person may walk within a yard of one, and it will not move. I have knocked them over with a stick, and even taken them with the hand. In autumn the long grass, so prevalent about many of the places they resort to, enables them to hide almost anywhere; but this is burnt by the villagers at the end of winter, and they then seek refuge in low jungle and brushwood, and with a dog are not so difficult to find.

"Both males and females often crow at daybreak and dusk, and in cloudy weather sometimes during the day. The crow is loud and singular, and, when there is nothing to interrupt, the sound may be heard for at least a mile. It is something like the words *chir-a-pir*, *chir-a-pir*, *chir chir*, *chirwa*, *chirwa*, but a good deal varied; it is often begun before complete daylight, and in spring, when the birds are numerous, it invariably ushers in the day; in this respect it may rival the domestic cock. When pairing and scattered about, the crow is often kept up for nearly half an hour, first from one quarter, then another; and now and then all seem to join in a chorus. At other times it seldom lasts more than five or ten minutes.

"The Cheer Pheasant feeds chiefly on roots, for which it digs holes in the ground, grubs, insects, seeds and berries, and, if near cultivated fields, several kinds of grain form a portion of its diet; it does not eat grass or leaves like the rest of our Pheasants.

"It is easy to rear in confinement, and might, without difficulty, be naturalized in England, if it would stand the long frosts and snows of severe winters, which I imagine is rather doubtful.

"This bird flies rather heavily, and seldom very far. Like most others, it generally utters a few loud screeches on getting up, and spreads out the beautifully barred feathers of its long tail both when flying and running. It does not perch much on

trees, but will occasionally fly up into one close by, when put up by dogs. It roosts on the ground generally, and when congregated together, the whole flock huddle up in one spot. At times, however, they will roost in trees and bushes."

I cannot avoid noticing that, in the case of this and several other species, Ornithognomon's famous letters to the *Field*, are mere abstracts and paraphrases of Mr. Wilson's papers, to which the author's obligations are, it seems to me, insufficiently acknowledged.

THE CHEER breeds throughout the lower ranges of the Himalayas, within the limits already indicated, at elevations of from 4,000 to 7,000 or 8,000 feet. Their nests may be met with from April to June, most of the eggs, however, being laid during May, early or late in the month, according as the season is a cold or warm one. Personally, I have only taken three nests of this species altogether, so that I cannot generalize safely, but my impression, derived from this limited experience is, that they always nest near or about the foot of some very precipitous hill-side, what the natives call "*Dang*," cliffs not absolutely vertical, but still the next thing to it, broken up into ledges and steps, and studded with down-trailing bushes, tufts of grass, and, growing here and there out of some larger cleft or wider ledge a few stunted trees.

In 1853 I was living at a small house behind the "Camel's Back" at Mussooree, a house which was afterwards converted into a dispensary. About a thousand feet below, and perhaps half a mile from this, is a precipice, such as I have described, and at the foot of this, in the midst of a tuft of grass, I found, on the 3rd May, a nest of the Cheer containing two eggs. It was a mere depression, some 14 inches in diameter and 3 inches in depth in the centre, obviously scratched by the birds, and strewed, rather than lined, with a few scraps of grass. Eleven more eggs were laid, one daily, and then the hen began to sit. One egg was addled; the rest were hatched some time in June, but I kept no note of the date. The whole family then took up their residence in the precipice, and there remained until the middle of October, when, the young being nearly full grown, I commenced shooting them, and shot a brace once or twice a week, until there were only two or three young ones left. At 11 A.M. they were always in the upper part of the precipice; my dogs used to be put in and would rummage along the ledges and turn them out, when, after a few strong strokes, outwards from the face of the cliff, they would all but close their wings and come down past me (I always stood in the same place on a knoll at the foot of the cliff where I was safe from stones) like lightning. I remember well missing every single shot the first day, but the next time I got a brace, and after that I never went home without one or two, and,

strange to say, my weekly, and sometimes bi-weekly, visits never had the effect of driving them away, and what is more, in October 1860, when I again visited the place, I found my friends in their old locality, and got three brace then and there.

I found another nest with several eggs late in May, in a very similar situation, on Nagtiber, at, I suppose, an elevation of about 6,000 feet, and a third, containing four eggs, which I took very early in May, a few miles from Juggutsook, in the upper valley of the Beas. This too was similarly situated.

Mr. Wilson tells us that "the female makes her nest in the grass or amongst low bushes, and lays from nine to fourteen eggs of a dull white, and rather small for so large a bird. They are hatched about the end of May or beginning of June. Both male and female keep with the young brood and seem very solicitous for their welfare."

The eggs are, as remarked by "Mountaineer," very small for the size of the bird. They are of a very pale stone colour or a dingy slightly *café au lait* tinted-white. They are almost devoid of markings, but towards one or other end many specimens exhibit small, somewhat pale, brownish red specks and spots ; and one or two that I have seen have had a good number of very minute specks of the same colour scattered about the surface. They altogether want the warm *café au lait* tint of those of the Moonal, Koklass, and the Kalij, and laid beside these eggs they seem to have a slightly greenish tint. In shape they resemble an ordinary hen's egg, and are not at all, as might have been expected, like those of *P. colchicus*. The shell has a slight gloss, but it exhibits throughout the minute pits or pores so characteristic of rasorial eggs, in a much less degree no doubt than those of the Peacock and others, but in a greater degree than those of the Koklass.

They appear very uniform in size ; at any rate the specimens I have measured only varied from 2·05 to 2·22 in length, and from 1·47 to 1·56 in breadth.

In this species the males are much larger and heavier than the females.

Males.—Length, 34·0 to 40·0 * ; expanse, 29·0 to 31·0 ; wing, 9·6 to 10·4 ; tail from vent, 20·0 to 23·0 ; tarsus, 2·8 to 2·95 ; bill from gape, 1·35 to 1·45. Weight, 2 lbs. 10 ozs. to 3 lbs. 7 ozs., and, I believe, to nearly 4 lbs., though I have no note by me of the fact.

Females.—Length, 24·0 to 29·5 ; expanse, 26·0 to 29·0 ; wing, 8·8 to 9·5 ; tail from vent, 13·5 to 15·5 ; tarsus, 2·5 to 2·65 ; bill from gape, 1·2 to 1·35. Weight, 2 lbs to 2lbs 12 ozs.

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* Jerdon, quoting Wilson, says 46, and tail to 28. I have never met with such birds (38 is, I think, the average length of fine Cocks), but Wilson is sure to be right, and exceptional birds of these huge dimensions must occur.

The bill is horny brown, always pale, sometimes very much so and yellowish, sometimes with a bluish grey tinge; the irides are bright reddish to orange, or yellowish brown; the legs and feet pale brownish plumbeous, or grey brown on the scaled front of the tarsi and toes, and pinker or more fleshy on the reticulated backs of the tarsi, sides of toes and back of the feet; the bare space round the eyes is scarlet crimson, very bright in some birds, and in some dotted with pinky white in one or more lines.

THE PLATE is all that could be hoped for from a chromo, and held at a distance of a few feet is a perfect picture of the bird.

a.W.Strutt.del

F Waller. Lith 18 Hatton Garden

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EUPLOCAMUS ALBOCRISTATUS

THE WHITE-CRESTED KALIJ.

Euplocamus albocristatus, *Vigors.*

Vernacular Names.—[Kalij, *Kumaun and Garhwál* (and generally); Kookera, Meerghi-Kalij. *Hills north of Mussooree;* Kaleysur *(male)*, Kalaysee, *(female)*, (Pahári Hindi), *Kullu, Mandi, Suket, &c.;* Kolsa (Punjabi), *Western Punjab.*]

WE have four well-marked species of Kalij Pheasant, and as one of them has for long been erroneously considered a hybrid, it may be well to preface my remarks on the first species by a brief table of the leading differences between the four:—

	Crest.	*Breast.*	*Rump and Upper Tail-coverts.*
E. albocristatus ♂.	White.	Greyish white, feathers sharp pointed.	Broadly tipped white.
E. leucomelanus ♂.	Black.	Do.	More narrowly do.
E. melanonotus ♂.	Do.	Do.	Black.
E. horsfieldi ♂.	Do.	Black, feathers rounded.	Broadly tipped white.

Throughout the fairly wooded lower and middle ranges of the Himalayas, from Kumaun to Hazára, the White-Crested Kalij occurs, here sparingly, there abundantly, according to season and a variety of other more or less potential influences.

It occurs equally, and in some places very abundantly, in the Siwáliks, a low range running nearly parallel to, but from thirty to sixty miles south of, the central and western sections of the Himalayas, and quite distinct from these geographically and geologically. It is the only Himalayan Pheasant that does occur in these.

I do not believe that it ever enters Nepal. Mr. Hodgson notes that, out of many hundred birds, he only saw one white-crested one, which was brought from far to the west beyond Jumla, and therefore probably from the Eastern Kumaun Hills, where I have myself shot *albocristatus.* If it *does* occur in Nepal, it is only in quite the westernmost portions. It is said to extend westwards into Baneer and Swat, but this needs confirmation. Biddulph, writing from Gilgit, says that he has not met with this species west of the Indus.

THE GREAT bulk of the birds will be met with in autumn and winter low down, near fields and water, or halting places on frequented roads. But during the summer they are occasionally to be found up to nine or ten thousand feet. They are not birds that, as a rule, afford much sport; you may see a dozen together feeding in the early morning on one of the "perows" or encamping grounds in the Siwáliks of the Dhún, and you may bag a couple; but even with good dogs to help you, they run so fast and fly so far that long and weary will be your hunt before you bag a second couple out of that same dozen after you have once fired. In fact, in such places, unless one has been marked into some neighbouring tree, when you will generally get a shot, it is best to go on sharp, as a quarter of a mile further on, on frequented roads like this, you will meet with others along the track, to which the horse dung and droppings of other beasts, containing undigested grain, attracts them. I have in old days shot four or five brace in an hour in the early morning on the road and "perows" when encamped in the Mohan or Lál Darwáza Pass, through which runs the main road to Dehra and Mussooree.

Generally in the Hills you may pick up three or four birds in a day, by beating all likely looking patches of cover near fields, but it is rare with this species to make a good bag. There are, however, places where you may come across the Kalij almost as thick as Pheasants in a Norfolk cover. Such places there used to be close to Bhím Tál and Naukuchia Tál, small lakes not far from Naini Tál, but at a much lower level, and at the former of these I once, early in November, killed eleven and a half brace in less than three hours.

In the Hills, as Mr. Young writes, "a bed of the small Hill bamboo, called Nergal or Ringal, with a stream running through it, more particularly if in the vicinity of cultivated lands, is an almost certain find for Kolsa."

Wilson says: "This well-known Kalij is most abundant in the lower regions; it is common in the Dhún at the foot of the hills, in all the lower valleys, and everywhere to an elevation of about 8,000 feet: from this it becomes more rare, though a few are found still higher.

"It appears to be more unsuspicious of man than the rest of our Pheasants; it comes much nearer his habitations, and, from being so often found near the villages and roadsides, is considered by all as the most common, though, in their respective regions, the Moonal *(Lophophorus impeyanus)* is more numerous.

"In the lower regions it is found in every description of forest, from the foot to the summit of the hills; but it is most partial to low coppice and jungle, and wooded ravines or hollows. In the interior it frequents the scattered jungle at the borders of the dense forests, thickets near old deserted

patches of cultivation, old cowsheds and the like, coppices near villages and roads, and, in fact, forests and jungle of every kind, except the distant and remoter woods, in which it is seldom found. The presence of man, or some trace that he has once been a dweller in the spot, seems, as it were, necessary to its existence.

"The Kalij is not very gregarious. Three or four are often found together, and ten or a dozen may sometimes be put out of one small coppice; but they seem in a great measure independent of each other, and much like our English Pheasants. When disturbed, if feeding or on the move, they generally run, and do not often get up, unless surprised suddenly and closely or forced by dogs, and lie rather close in thick cover.

"They are never very shy, and, where not unceasingly annoyed by sportsmen or shikáris, are as tame as any sportsman could wish. In walking up a ravine or hill-side, if put up by dogs a little distance above, they will often fly into the trees close above his head, and two or three allow themselves to be quietly knocked over in succession. When flushed from any place where they have sheltered, whether on the ground or aloft, they fly off to some distant cover, and alight on the ground in preference to the trees.

"Their call is a loud whistling chuckle or chirrup; it may occasionally be heard from the midst of some thicket or coppice at any hour of the day, but is not of very frequent occurrence. It is generally uttered when the bird rises, and, if it flies into a tree near, often continued some time. When flushed by a cat or a small animal, this chuckling is always loud and earnest.

"The Kalij is very pugnacious, and the males have frequent battles. On one occasion I had shot a male, which lay fluttering on the ground in its death struggles, when another rushed out of the jungle and attacked it with the greatest fury, though I was standing reloading the gun close by. The male often makes a singular drumming noise with its wings, not unlike the sound produced by shaking in the air a stiff piece of cloth. It is heard only in the pairing season; but whether to attract the attention of the females or in defiance of his fellows I cannot say, as I have never seen the bird in the act, though often led to the spot where they were by the sound."

This is certainly not to attract the females, but solely as a defiance. If you peg out a tame male of the allied vermicellated Pheasant in the breeding season, as is commonly done in Burma, surrounding him with snares, and then set your male drumming, by imitating the sound with a piece of stiff cloth, male after male replies, rushes in at your bird and gets caught in the snares, but no female ever puts in an appearance or is ever thus snared.

I have never known this mode of capture resorted to in the Himalayas, the reason being, I believe, the difficulty that exists in taming the present species.

Wilson continues :—

" It feeds on roots, grubs, insects, seeds and berries, and the leaves and shoots of shrubs. It is rather difficult to rear in confinement when caught old ; and the few chicks I have tried have also soon died, though possibly from want of proper care and attention. It is singular that, of the Hill Pheasants, the one most common near the habitations of man should so ill brook the loss of liberty, while the Jewar (*Ceriornis melanocephalus*), the most retired and solitary of all, is the most easily reconciled to it.

" In the lower hills, in the absence of larger game, this bird may serve to wile away a few hours of the sportsman's time in almost every place where there is wood or jungle ; narrow well-wooded ravines and thickets of low jungles are the places in which to seek it. A good dog is essential ; and without one, though a bird may be occasionally picked up, it is hardly worth while going out. In travelling in the interior, a dog used to hill-shooting should always, if available, be brought ; and with its assistance a few Kalij may be bagged in some of the coppices and jungle passed through almost every day's march, till the regions where larger game is expected are reached."

Captain J. H. Baldwin makes some very correct original remarks in regard to this species, which I take the liberty of quoting :—

" Its favourite habitat is among thick clumps of bushes and shrubs near the banks of rivers, in low valleys through which streams of water run, and on the slopes of hills where there is plenty of low bush cover, especially thorny thickets bordering on cultivation ; in the early morning, the vicinity of an old deserted cow-shed is a sure resort of this bird if anywhere in the neighbourhood. I have flushed this Pheasant and the common red Jungle Fowl from the same description of cover at the foot of the hills. The call of the bird, which may be heard at all times of the day, is a sharp *twut*, *twut*, *twut*, sometimes very low, with a long pause between each note, then suddenly increasing loudly and excitedly. Generally speaking, when uttering this cry, which at times might be mistaken by any one unacquainted with it for that of some small bird, the Kalij is alarmed by a prowling Marten or Hawk hovering overhead, perhaps a dog, but still oftener it is heard when a pair of cocks are about to engage in mortal combat.

" Not unfrequently a cunning old cock, instead of taking wing at once when the dog is close upon him, has a provoking habit, most irritating to both dog and master, of flying up into a tree, making a prodigious clucking the while, and at the same time taking a look round to see if the coast is clear. The bird in this

manner often observes where the gun is posted, and then takes wing in a safe direction.

"The Kalij Pheasant, when alarmed, will generally fly down the *khad*, and will often take along the side of the hill. Though it will *run*, yet it will hardly ever *fly* up hill. Its speed when well on the wing is amazing, greater frequently, I am certain, than any rocketer out of an English cover.

"When not bullied by the hill men, they will come close up to the backs of villages, especially if there are fields of corn at hand. I have shot them out of standing crops when the fields are situated near the jungle."

Referring to the whirring sound they make most commonly, but not exclusively, in the breeding season, he says :—

"We had been sitting motionless for, I suppose, half an hour, when I was startled, all of a sudden, by the loud drumming noise I have already described close at hand. The sound came from behind, and on looking over my shoulder, my companion with a smile pointed out the drummer. An old cock Kalij was squatting on the stump of a fallen tree, and, with its feathers all ruffled and tail spread, was causing this extraordinary sound by rapidly beating its wings against its body."

As regards this last, it is no doubt difficult to see how the bird makes the peculiar sound referred to ; the wings are kept in such rapid vibration that you can only see a haze, but I myself think that the wings are *not* struck against the body, and that the sound is merely caused by the extremely rapid movement of the wings, through the tensely strung feathers of which the air hurtles.

Another writer notices a very characteristic habit this species has, where a good deal shot at, of flying up, when disturbed, into some tree, and there remaining perched motionless in some fork, or dense patch of foliage, or upright against the trunk, so that it is almost impossible to see it. You walk round and round, you throw stones, but nothing appears ; suddenly some one catches sight of it, that same instant it drops like a stone from its perch always with the trunk between it and the gun, and is off down the ravine without a single call or flutter, before you even know that it has been sighted.

Though Wilson does not notice it, they feed greedily on grain, and my people at Kotgarh used to snare numbers in the winter, by little heaps of grain laid in fields where on previous mornings they had been noticed feeding. Mons. Chauveau, Bishop of Sebastopol, but stationed at Ta-tsienlon, on the Chinese and Tibetan frontier, tells us, that Lady Amherst's Pheasants are there so wide awake that, on discovering such a bait, they suspect a snare, and try to brush away the grain with their immense long tails, and thus eat it in safety. *Our* Pheasants are not quite so advanced in civilization as these Chinese ones.

Colonel Tickell and other writers assert that the Kalij is polygamous. This *may* be the case in some places, but I can only say that hundreds of times in August and September I have put up a pair with their young brood, and that from May to October I have rarely found an old female without finding a male somewhere near, and *vice versâ*.

In a wild state this Pheasant sometimes interbreeds with other species. I myself shot a male which could only have been a cross with a Koklass, and, what is still more surprising, Col. Fisher writes :—"I once came across a bird of this species with the head, neck, and crest of a Kalij, but the back and alternate feathers of the tail most unmistakeably those of the Moonal. I skinned the bird and made the specimen over to an English Naturalist some 20 years ago."

THE COMMON KALIJ breeds everywhere in the Himalayas, south of the first snowy ranges (and occasionally in the Dhuns and Tarais that fringe their bases and in the Siwáliks) from the borders of Afghanistan to those of Nepal.

I have found eggs in the Dhun as early as the 4th April, and at Simla as late as the 20th June. They breed at all elevations from the level of the Tarai (where it may be 1,200 feet above the sea-level) up to fully 8,000 feet.

They are not very particular as to choice of locality, but more or less inhabited and thinly forest-clad tracts, with pretty dense undergrowth, are usually chosen ; little densely-bushed watercourses on the sides of hills, moderately thickly or somewhat thinly covered with oak and rhododendron forest, and in the neighbourhood of fields, being much affected.

The Common Kalij hardly forms a regular nest. It usually gets together a sort of pad, sometimes rather massive, more commonly very slight, of dead leaves, fine grass and coarse moss-roots, mingled with a little grass or a few sprigs of moss, and in a slight depression in the centre of this it lays its eggs. One which I measured *in situ* in May 1871, in the valley of the Sutlej just below Kotgarh, was circular, 11·5 inches in diameter and 4 in thickness outside, with a central depression 6 inches wide and nearly 2 inches in depth in the centre. Others, again, have been mere linings to a slight hollow in the ground, either natural or scratched by the birds ; I have seen a great many nests of this species, and they were generally very scanty. The nest is usually well concealed under tufts of fern (they are very fond of fern-clad hill sides), grass, or "ringal," as the natives call the slender dwarf hill-bamboos.

I have never found more than nine eggs myself, but I have had as many as thirteen brought me by natives, said to have been found in one nest. As a rule, I do not think they lay more than nine eggs, and certainly one rarely sees more than eight or nine young birds with a pair of old ones.

The female sits for rather over three weeks, and during this period may often be captured by hand or seized by a dog on her nest. The male is always close at hand, and if the hen be disturbed by a dog, will fly into a tree above him and commence a threatening cackle—both parents continue with the young ones till these are nearly full grown. Such at least is my experience.

From Native Garhwál Mr. Wilson writes to me :—"The Kalij is found from the foot of the hills, or rather from the Siwálik Range to the Snows, and consequently breeds at all elevations up to 9,000 feet; in a few localities still higher. I lately found a nest above the village of Sukhi in the Bhágirathi Valley, which must have been at 9,500 feet. In the Dhún, at the foot of the hills and in the lower valleys, the Kalij begins to lay in April. In the higher ranges it lays in May, and some birds not till the beginning or middle of June. The nest, if it can be called such, is generally in a coppice where there is plenty of underwood, and under an overhanging stone, or thick low bush or tuft of grass. It is merely a hole scraped in the ground. The eggs are nine to fourteen in number, very like those of some domestic fowls, a yellowish or buffy white. One I have before me is 2 inches long and 1·5 wide; some are rounder; one from another nest is 2·0 long and 1·62 wide. Both parent birds are generally found with the young brood. Occasionally very late broods would lead one to infer, either that the Kalij sometimes has two broods in the year, or that, when a nest is destroyed, they recommence the business of incubation."

Captain Hutton remarks: "This species, the Kalij of the hill-men, is found in the hills at all seasons, and is common at every elevation up to the snows. It breeds in May and June. In the latter month I found a nest by the side of a small water-course composed merely of a few dead leaves and some dry grasses, which had probably been accumulated by the wind and tempted the bird to deposit her eggs upon them. The spot was concealed by large overhanging ferns, and contained the shells of eight eggs of a sullied or faint brownish-white, like some hen's eggs; the tops of all were neatly cut off as if by a knife, showing that the young ones had escaped, and, singular enough, I had the day before captured the whole brood."

Captain Cock, writing from Dharmsála, says: "The Common Kalij breeds in May and June, and lays its eggs, as a rule, on the ground under a rock or bush; but I have taken a nest on a large low bough of a tree, in a hollow on the upper side of which the eggs were placed. The hen will allow herself to be caught on her nest at times. Lays eight eggs of a buff colour."

The eggs are oval, moderately elongated, a good deal pointed towards one end, perhaps typically less so than those of the Grey Partridge, more so than those of the Peahen, but belonging to that type, and not to that of the Francolin's or English

Pheasant's. The eggs are always glossy, sometimes highly so, and the surface is generally very finely and closely pitted with minute pores like those of the Pea-Fowl's egg on a diminutive scale. In some specimens these are pretty conspicuous, but in the majority they are only noticeable on close inspection, and in some they appear almost entirely wanting. The eggs vary in colour from a very pale creamy or buffy white to a rich reddish buff, even richer and redder than any specimens of the Pea-Fowl's eggs that I have yet seen; though such may doubtless occur, I have not yet seen a specimen freckled or mottled as Pea-Fowl's eggs occasionally are, though I have seen some pretty thickly speckled with minute white spots.

In length the eggs vary from 1·85 to 2·03, and in breadth from 1·25 to 1·52; but the average of fifty eggs is 1·94 by 1·44.

THE FOLLOWING are the dimensions, &c., of the White-Crested Kalij:—

Males.—Length, 24·0 to 29·0; expanse, 28·75 to 32·0; wing, 8·7 to 10·0; tail from vent, 10·2 to 13·0; tarsus, 2·9 to 3·1; bill from gape, 1·3 to 1·55. Weight, 2lbs. to 2 lbs. 6 ozs.

Females.—Length, 20·0 to 23·0; expanse, 24·5 to 27·2; wing, 8·0 to 8·3; tail from vent, 7·8 to 9·0; tarsus, 2·6 to 2·8; bill from gape, 1·2 to 1·3. Weight, 1 lb. 4 ozs. to 2 lbs. 4 ozs.

The irides are orange brown; the bare eye-patch bright scarlet to deep crimson, dotted over with numerous tiny tufts of abortive black feathers; the bill greenish white, dusky at tip; the legs and feet livid white, with a purplish or brownish tinge, varying to pale grey brown, often with an olive tinge.

THE PLATE gives a tolerable idea of the bird, though neither bills nor legs and feet are quite correctly coloured, while the male seems to have lost his own tail and borrowed one from a neighbour when he sat for his portrait.

F. Waller, Chromo Lith. 18, Hatton Garden, London

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EUPLOCAMUS LEUCOMELANOS

THE NEPAL KALIJ.

Euplocamus leucomelanus, *Latham.*

Vernacular Names.—[Kalich, Kalij (Perbuttia), Rechabo, (Bhutia) *Nepal.*]

IT is very amusing to look back on the past literature of these Kalij Pheasants.

We find Adams (P. Z. S., 1858, 499) doubting whether there is more than one. He says: "*melanonotus*, Blyth, comes very close to *albocristatus*, but has not the white markings on the crest and back; yet the species is subject to variety; so much so that it is questionable if Blyth's bird is a distinct species."

Tickell admitted two, but united *horsfieldi* with *melanonotus*.

Blyth admitted three, but following Gray and a host of other writers, declared the present species, which we may probably call "*leucomelanus*," *a hybrid* between the White-crested and Black-backed Kalij.

No species is, however, better establishable than the Nepal Kalij. It has a wide but accurately definable range, throughout which it retains an uniform plumage, conspicuously distinct from that of all the other three species, and within which range no other of the allied species occurs.

Throughout a tract over 350* miles in length, and from 60 to 100 miles in width, in fact throughout the whole of Nepal, except perhaps the extreme easternmost and westernmost portions, *leucomelanus* is the only Kalij that occurs.

Hodgson notes that he never saw any other bird in Nepal except one white-crested one, brought from beyond Jumla, and that he had seen hundreds of black-crested ones. He never saw *melanonotus* until he went to Sikhim. Scully, who has been some eighteen months in Nepal, whence he brought me some twenty specimens of *leucomelanus*, and where he had examined double this number, never saw any species there but this.

It is a misuse of language to talk of a species like this as a hybrid, just as it is to apply the same term to *Euplocamus cuvieri*, which occupies the entire Aracan Hill ranges, and is, I believe, the only Pheasant there found.

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* I am well within the mark here, for Nepal is close on 500 miles in length.

It may appear at first sight inconsistent for me to insist on dividing the Kalij Pheasants into four species, while I deprecate making more than one of the Koklass.

But the cases are wholly different. In the Koklass my large series and all the hundreds of others that I have examined, tend to prove that all three forms grade by absolutely insensible degrees into each other, and thus form a single undivided chain, although the links at either extremity and towards the centre differ somewhat in pattern. This unbroken chain constitutes, according to my views, a single species.

On the other hand, the four Kalij Pheasants each constitute a separate chain. I have never yet seen a single wild-killed specimen bridging over the differences between any two of the four. Each has a distinct and wide range, throughout which it is invariable, and which, so far as we know, is separated by blanks in which *no* Kalij occurs from the ranges of all the others.

In regard to this species, Dr. Scully, to whom belongs the credit of rehabilitating it, writes :—

"The adult male of this species differs from *G. albocristatus* in having a small *black* crest, instead of an ample *white* one; in the white tips to the feathers of the rump and upper tail-coverts being much narrower and further apart; and in the tarsi being more slender. From *melanonotus* it differs in having the rump and upper tail-coverts white tipped; in the feathers of the throat and breast being darker, and more grey; and in having the tarsi much more slender. From *horsfieldi* it differs conspicuously in having the feathers of the throat and breast greyish white and lanceolate, instead of pure black and rounded; and in having the rump and upper tail-coverts much more narrowly tipped with white.

"The adult female resembles that of *melanonotus* much more closely than it does those of either *albocristatus* or *horsfieldi*. It differs from *melanonotus* in having the feathers of the upper surface more broadly margined with greyish white; the middle tail-feathers are more broadly vermicellated, though not so prominently as in *albocristatus;* the edgings to the feathers of the lower surface contrast more, and the rump contrasts more with the middle tail-feathers—in this respect recalling *horsfieldi*, but in no other.

"This bird is no doubt the *Phasianus leucomelanus* of Latham, 'Ind. Orn.,' II., 633. Kirkpatrick, in his 'Account of the Kingdom of Nepal' (1811, p. 132), gives a good figure of this Kalij, showing its distinctive points, *viz.*, black crest, white barred lower back, and grey white throat and breast, and says:—'The Kalij is met with in the thickets which overrun the gorges of the mountains near Noakote, &c.' Mr. Hodgson, curiously enough, seems to have overlooked the distinctness of the species. In his drawings, now in Mr. Hume's custody, he gives an excellent figure of our bird, but labels it

Gallophasis albocristatus * (!) an impossible title, seeing that the bird has a black crest. In both editions of the B. M. Catalogue of Mr. Hodgson's collection (1846 and 1863) *Gallophasis leucomelanus* is entered ; but then *albocristatus* is added as a synonym, which is clearly an error.

" But it may be, and indeed has been, held that the Nepal Kalij is a hybrid between *albocristatus* and *melanonotus*. In disproof of this theory, I can now bring forward ample evidence.

" The Nepal Kalij is a most interesting species, exactly intermediate in colouration and in habitat to the White-crested and Black-backed Kalij Pheasants, and is possibly the older form from which the other two have branched off to west and east and become modified. During the two years I resided in Nepal I tried in vain, both personally and by the offer of rewards, to obtain a specimen of either *albocristatus* or *melanonotus*, which, on the " hybrid" theory, should have been found there interbreeding. I have seen scores of the Nepal Kalij (of which at least thirty were adult males), and they were all exactly alike and constant to the definition above given of the species.

" Any one seeing only a single male bird of *leucomelanus* would perhaps naturally conclude that it was a hybrid ; but when the two supposed parent species are found to be entirely absent from the large tract of country where the Nepal Kalij abounds, while the characters of the latter are constant in a large series of specimens—the conviction that it is a thoroughly good species seems to me to be irresistible.

" The Nepal Kalij extends to the east nearly as far as the Aum I believe, *melanonotus* being found east of that river only ; of the range of our bird to the west I have no certain information, but *albocristatus* probably replaces it in the extreme western portion of the Nepal territories."

THE HABITS and nidification of this species are, of course, very similar to those of the other Kalij Pheasants. This species, however, would not seem to descend quite so low as the preceding. Hodgson notes : " This is by far the commonest Pheasant in Nepal. Its range is the central region ; it is never found in the Tarai, seldom in the Cachar.† Where *Gallus ferrugineus* ends there the Kalij begins, and extends, though in diminishing numbers, to the region of the Moonal and Tragopan.

Dr. Scully says :—

" *Leucomelanus* is common wherever thick forest is found, from Hitorna in the Nepal Dún to the Valley of Nepal ; in all

* There are several figures, big and little ; but there is also one of true " *albocristatus*" which Mr. Hodgson notes as being the only one of the kind he had seen, so that, though he gave no separate name, he did recognize the difference.

† This is Mr. Hodgson's name for the more elevated regions of Nepal. Elsewhere the term is applied to low alluvial flats along the banks of the large rivers of Continental India.

the wooded hills surrounding the latter, up to an elevation of nearly 9,000 feet; and in every forest about Noakote. It is usually seen in pairs or in parties of from three to ten, often feeding on the ground near cultivated patches at the borders of forest.

"The birds seem very fond of perching on trees, and it is usually in this position that one comes across them in forcing one's way through forest which has a dense undergrowth. On such occasions the Kalij first gives notice of its whereabouts by whirring down with great velocity from its perch, and then running rapidly out of sight to the shelter of some thicket. In the winter the birds roost on trees at the foot of the hills, and the plan for making a bag is to post one's self about sunset under some trees which they are known to frequent, and await their coming. The birds are then soon heard threading their way through the jungle towards their favourite trees, and at once fly up and perch. When once settled for the night in this way, they are not easily alarmed, and I have shot four or five birds in quick succession before the rest of the party would clear out to quieter quarters. Occasionally, too, one can get a shot at the Kalij as they cross a hill path through the forest on their way to or from some stream.

"Great numbers of the Nepal Kalij are snared and brought into Khatmandu for sale. The birds bear confinement in the valley very well, and I reared several chicks to maturity."

It may be useful to note that Mr. Hodgson had for two years a perfectly *pure* white specimen of this species in confinement. The irides, orbital skin, legs, feet and bill were all normally coloured. The bird was a male, and when it died it was in fine plumage.

MALES MEASURED.—Length, 23·0 to 26·0 (according to tail); expanse, 26·0 to 29·5; wing, 8·7 to 9·2; tail from vent, 10·9 to 12·3; tarsus, 2·8 to 3·05; bill from gape, 1·25 to 1·37. Weight, 1 lb. 12 ozs. to 2 lbs. 8 ozs.

Females.—Length, 19·3 to 20·5; expanse, 25·0 to 27·0; wing, 7·8 to 8·5; tail, 7·3 to 8·7; tarsus, 2·3 to 2·9; bill from gape, 1·2 to 1·3. Weight, 1 lb. 5 ozs. to 2 lbs.

The bill is greenish horny, more or less dusky about nostril and base of maxilla; sometimes the bills are slightly greyer; irides usually dark brown, sometimes lighter; orbital skin fine crimson red, and, as in the other species, papillated; lower eyelid grey, with black spots; legs and feet pale brownish, or dingy greyish horny; the toes usually a little darker than the tarsus; claws brownish horny; spurs dusky.

THE PLATE seems to call for no special remark, except that in fully adult and full-plumaged males, the tails are considerably larger than here depicted.

Dr. Scully's description of a chick of this species is interesting :—

" *Young.*—A chick captured on the 10th of June, whose wing measured only two inches, had the feet orange and the bill greenish yellow horny ; the head was rufous brown ; the body above dark brown ; each feather of the wing-coverts and scapulars having a blackish subterminal bar, and a fulvous tip ; beneath sullied fulvous. Young birds of both sexes about three months old resemble the female, but have the bill livid at tip, the orbital skin pale fleshy red, and the feet livid brownish. At this stage the black subterminal bars on the upper feathers are still well marked. The young male assumes the black plumage when about five months old (such, at least, was the case in two specimens I had in confinement) ; but at this age it still shows traces of the original brown colour about the feathers of the neck and upper back, and in this state it probably represents Latham's "Nepal Pheasant" (" Ind. Orn.," II., 632.)

F. Waller, Chromo-Lith. 18, Hatton Garden, London.

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EUPLOCAMUS MELANOTIS

THE BLACK-BACKED KALIJ.

Euplocamus melanonotus, *Blyth.*

Vernacular Names.—[Muthoora (Bengali), Kirrik (Bhutea), Karrik-pho (Lepcha), *Sikhim.*]

THROUGHOUT Sikhim, Native and British, the Black-backed Kalij occurs in suitable localities; it certainly occurs in the eastern parts of Bhután, whence I saw specimens shot by officers with the field force employed there in 1865, and it may occur in the easternmost parts of Nepal. How far east it gets in Bhután is quite uncertain. Farther east, north of the Darrang district, it was *E. horsfieldi*, the Eastern or Black-breasted Kalij, that was met with by the Daphla force.

THE RANGE of this species is, I think, more restricted than that of the White-crested Kalij. It occurs quite at the foot of the hills, where I have shot it, and I have seen it occasionally and heard very often of its occurrence in tea gardens and in our Cinchona Plantations up to nearly 6,000 feet, but I have heard of no one shooting it up in Moonal ground at 8,000 to 9,000 feet, and I doubt whether it ascends as high as either of the two preceding species.

Its favourite haunts are ravines, with thick low cover, and it appears to me to like the cover of tea bushes quite as well as, if not better than, the tangled growth of its native jungles.

I have had but little personal experience of this species, but my friend, Mr. Gammie, furnishes me with the following excellent account of it:—

"In Sikhim the Black-backed Kalij is abundant from about 1,000 up to 6,000 feet, and it is occasionally found at both lower and higher elevations. It frequents forest and scrub, rarely coming out to cleared land except in the mornings and evenings to feed, and even then seldom leaving the cover for many yards.

"At no time of the day is it a shy bird, but in the evenings and early mornings it is almost as tame as a domestic fowl, and, if feeding on the road, will leisurely walk but a few steps out of the way of a passer-by.

"It appears to dislike sunshine, and scarcely leaves the shade of trees or shrubs while the sun is up.

"It seldom, if ever, perches in the day time, but keeps to the ground, unless suddenly disturbed by dogs or wild animals, when it may take refuge in a tree as a last resource. If alarmed by men it always runs along under the scrub if the circumstances are favourable for that mode of escape; but if not, it flies within twenty feet of the ground for forty or fifty yards and then again alights on the ground. By making a short détour they will be found close to where they alighted.

"Usually it is a silent bird, but when suddenly alarmed it utters a sharply repeated "*koorchi, koorchi, koorchi,*" as it rises on the wing. When, however, the males are in the fighting humour—which they usually are about breeding time—their call, as they advance towards each other, is "*koor koor; waak waak;*" the former being the threatening, and the latter the attacking note. They also at times answer each other's calls in the jungles.

"In fine weather the male often makes a sharp drumming noise by beating his wings against his sides, somewhat after the style of the wing flapping of a domestic cock preparatory to crowing from some elevated place; but instead of the cock's few leisurely flaps the Kalij strikes oftener and smarter, producing a sound more like drumming than flapping. From the same spot he repeats this drumming noise twice or thrice at short intervals, but gives no voice along with it. It seems as though he was in such joyful mood that he must give expression to his delight somehow, but inherited experience had effectually taught him that any attempt at crowing in the jungles was likely to attract the attention of wild beasts, and that he must stick to his drumming and leave the crowing part to the domestic cock who can safely indulge in that amusement.

"The natives look on the drumming of the Kalij as a sure sign of approaching rain. It is heard at all seasons of the year, but most frequently before the setting in of the rainy season; at other times generally just before a fall of rain.

"The food of the Kâlij is varied in the extreme. It eats almost everything in the shape of seeds, fruit, and insects, but is particularly fond of the larvæ of beetles out of cowdung and decayed wood, and of several of the jungle yams which bear tubers along their vines at the axils of the leaves. When the vine-borne tubers are exhausted, it will scratch away the soil to get at those underground.

"Natives who have kept them alive say they thrive excellently on yams and grubs only, but that no insect comes amiss to them except ants. It is also very partial to all kinds of grain from the fields adjoining its cover, seeds of the *Erythrina* and cucurbitous plants, the young tops of several nettles and ferns, and the fruit of numerous plants, especially of the Totney

(*Polygonum molle*) and the yellow Raspberry (*Rubus flavus*), two shrubs which yield more bird-food in Sikhim than do any other dozen kinds of plants put together.

"The Black-backed Kalij is too tame and too fond of keeping to the ground to afford much sport. It can use its legs so much better than it can its wings that, unless very hard pressed, it trusts entirely to the former, and they are worthy of its confidence, for they can bear it over the ground with surprising rapidity. The cover it affects is usually so dense and so full of creepers, that a dog can scarcely make headway in it, and has but little chance of outrunning it and forcing it to rise. Sometimes six or eight are found in one covey, but usually not more than three or four.

"A full grown male weighs about 2½ lbs. The flesh is rather poor eating."

As supplementary to this I may add that Beavan says that this species is "common about Darjeeling, at all elevations between 2,000 and 7,000 feet, and also occurs abundantly in the interior of Sikhim. I procured feral specimens of this bird on one occasion in a ravine below Pankabári, at the very foot of the hills; on another in Major Wardroper's plantation at Darjeeling (about 6,000 feet), and found them abundant at Rinchingpoong in Sikhim (from 5,000 to 6,000 feet), where, when put up by a dog, they took to trees and were easily shot. They roost on the same bough every night; and consequently the exact locality is easily found by the number of white droppings which accumulate on the ground below. They were generally met with in pairs or small parties of three and four."

Colonel Tickell remarks that the only way he ever succeeded in shooting the Black-backed Kalij without dogs to help him "has been by going at early dawn along the paths used by travellers before any one was up or stirring near the station. In such spots, before the daylight has become too decided, or any passenger has broken the stillness of the mountain side, the Hill Pheasants are sure to be met with, picking and scratching about the dung scattered on the road; but creep as silently and swiftly as you will, peep round the corner with the stealth of a Red Indian, and have your gun full-cocked and almost at the shoulder, yet ten to one this keen-eyed bird sees you first, and you get your shot as he is diving into a thicket, and succeed probably in merely knocking off a few feathers."

He also tells us that "all three species of Kalij have the same notes. When unmolested, or quietly turning up the leaves and scratching the ground for food, they emit a frequent gentle cluck, a little sharper than that of a domestic hen, and occasionally these clucks are rapidly repeated, and end in a louder, shriller screech or chirrup, which constitutes the crow or call of the cock bird. If suddenly flushed, it rises with a loud harsh chuckle or cackle."

THE BREEDING season lasts for several months.

Quite low down, at elevations of two thousands feet or so, they lay as early as the end of March; at four or five thousand feet eggs may be looked for about the middle of May, and towards the higher limits, 6,000 to 7,000 feet, they lay in June, and eggs, much incubated it is true, have been found as late as the end of July.

They seem never to make a nest; at any rate, of the dozen odd clutches reported to me, none were found in any constructed nest; three were found in little clumps of grass at the feet of tea-bushes, and the rest amidst dead leaves and moss, a little scratched away, under the cover of bushes or tufts of ferns or at the base of overhanging rocks.

On some tea-gardens, the eggs are unfortunately constantly found by the coolies and destroyed; the whole Tarai, and the whole of the exterior hills, are becoming a sea of tea; the Black-backed Kalij is not nearly so common in the interior as in the outer hills; and I expect that, within a few years, this species will become comparatively rare.

Ten seems to be the full number of eggs; at least this is the largest clutch reported to me.

The eggs are, of course, of the regular game fowl type, varying very much in size and shape (some being much broader, others more oval) as also in tint, some being more gamey than others. Colonel Tickell, however, could never have seen the eggs laid by *wild* birds, when he described them as *white*. This they never are, but they ring the changes from pale pinky creamy, and pale *café au lait*, to a rich *café* with little milk in it.

A nest obtained near Darjeeling in July contained six eggs of the usual Kalij type, that is to say, broad regular ovals, but little compressed towards the small end, of a decided *café au lait* tinge; the shell strong and hard; the surface everywhere covered with minute pits, but withal fairly glossy.

Of two nests obtained at the close of March by Mr. Gammie at elevations of 2,000 and 3,000 feet, in the neighbourhood of Darjeeling, the eggs of the one were a rich pinky *café au lait* (one of them showing a good deal of pure white mottling), and of the other a rather warm buffy stone colour.

The eggs seem to vary from 1·79 to fully 2 inches in length, and from 1·4 to 1·54 in breadth; but the average of a large series is 1·91 by 1·47.

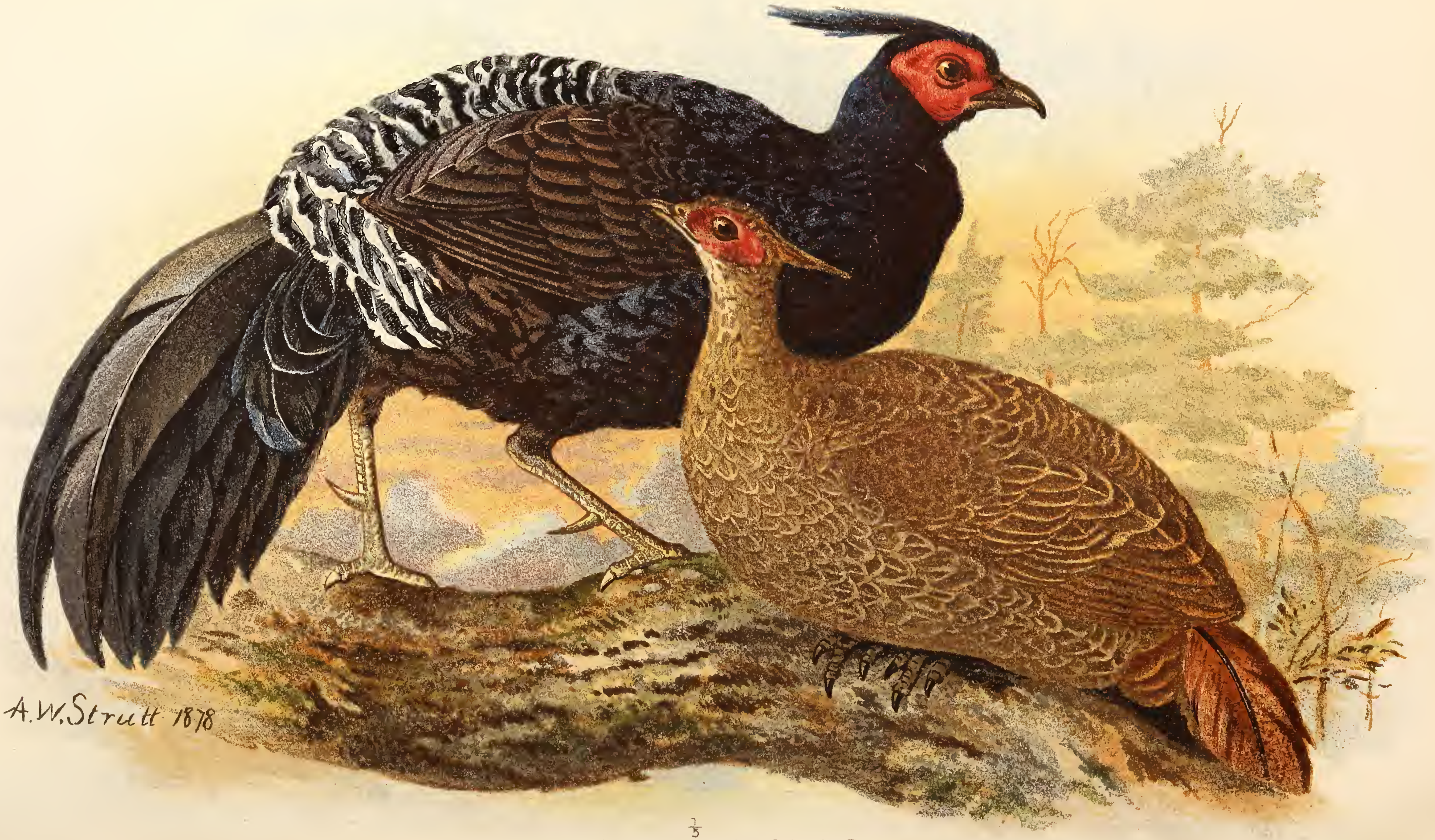
I HAVE measured but few of these birds, and my figures therefore will probably need additions.

Males.—Length, 21·0 to 25·0; expanse, 26·5 to 29·0; wing, 8·9 to 9·5; tail from vent, 9·5 to 12·3; tarsus, 3·05 to 3·2; bill from gape, 1·28 to 1·36. Weight, 2 lbs. 6 ozs. to 2 lbs 12 ozs.

Females.—Length, 18·0 to 21·0; expanse, 25·0 to 27·0; wing, 8·1 to 8·8; tail from vent, 7·5 to 8·6; tarsus, 2·7 to 2·9; bill from gape, 1·15 to 1·25. Weight, 1 lb. 14 ozs. to 2 lbs. 4 ozs.

The bill is yellowish or greenish horny, pale yellowish at tip, dark at base; legs and feet pale horny brown; claws and spurs often with a more fleshy tinge; irides bright orange brown to dark brown; orbital skin bright red.

THE PLATE.—As usual the colours of the bill, legs, and feet are not quite correct; and the plate fails to convey an adequate idea of the lustrous blue black of the male's upper plumage.



EUPLOCAMUS $\frac{1}{5}$ HORSFIELDI.

F. Waller. Chromo Lith. 18. Hatton Garden. London.

THE BLACK-BREASTED KALIJ.

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Euplocamus horsfieldi, *G. R. Gray.*

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Vernacular Names.—[Do-reek, *Dibrugarh;* Dúrúg, Dirrik, *Gáro* Hills; Motoora (Khasi), *Sylhet;* Mathura, *Chittagong.*]

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THE exact western and eastern limits of this species are still somewhat undefined. It is plentiful in Cachar and around the bases of, and up to four thousand feet elevation on, the Khási and Gáro Hills, and thence eastwards in suitable localities right up the Valley of Assam to beyond Sadiya, our easternmost point, whence I have several specimens. It has been met with in the low outer hills of Eastern Bhután, and further east in the lower ranges of the Daphla Hills. It is common in Sylhet and also in Hill Tipperah, whence I have specimens, and again in Northern Chittagong, where Sanderson found it plentiful in the Chengree Valley. It very possibly is also found in Southern Chittagong and the extreme north of Aracan, but I cannot find satisfactory evidence of this.

I do not know of its occurrence in Mymensing or Dacca, and I believe that, from Dhubri to the sea, the Brahmaputra constitutes its western boundary.

THE RANGE of this species is decidedly lower than that of either of the other three; it is common down in the low country along the edges of cultivation and the banks of rivers where there is forest, only a few hundred feet above sea level, but it grows less plentiful, I am assured, as you ascend the hills, and is very rarely shot at elevations exceeding 4,000 feet.

I have no personal knowledge of the species. Writing from Dilkhusha in North-East Cachar, Mr. Inglis remarks: "These Pheasants are pretty common in this neighbourhood. They affect forest jungle with an open bottom, and are most often met with along the banks of rivers, where they feed morning and evening, retiring into cover during the heat of the day. They only occasionally show themselves on the rice fields adjoining cover. I have seen as many as eight together, although they are more often observed in pairs or singly. Their food consists of wild berries or fruits, beetles and other insects.

"They afford fair sport with dogs by hunting round the edges of places they frequent. They rise with a loud whirr, emitting

a shrill *cheep*, *cheep*, *cheep*, and very often settle on the trees. Their flesh is very white when cooked, but greatly inferior to that of the Common Jungle Fowl. A good cock weighs about 3lbs.; the hen is slightly smaller.

"They retire deeper into the jungle to breed, and the young are hatched early in May. I have never seen their nest."

Mr. R. A. Clark, of the Mynadhar Tea Garden in Cachar, says: "These birds are very common here, keeping to well-wooded hills and ravines. They go about in pairs, though parties of three and four are often met with, and on one occasion I saw a party of eleven; they breed in the dense forests, making a nest on the ground. I have never myself *seen* a nest, but the Kookies have repeatedly brought me clutches of eggs, never more than four in each nest, which I have repeatedly set under domestic fowls; the chicks were often hatched, but never could be reared.

"The male birds are used as decoys by the Kookies, who fix nooses in the form of a square enclosing the decoy, (which is tied to a peg by the leg), and watching from a little distance secure any bird that may be noosed.

"I once witnessed a fight between a male Kalij and a Jungle Cock *(G. ferrugineus)* for the possession of a white-ant hill from which the winged termites were issuing. I watched the contest for a quarter of an hour, by which time both birds were exhausted, when the Kalij fled, leaving the Jungle Cock in possession. On another occasion I came across a pair of male Kalij fighting amongst a lot of ferns; they were so taken up with their own affairs that they did not notice my having approached to within 15 yards; I let them go on for ten minutes, and then went up and caught both; they were quite exhausted; the feathers from the head and neck had all been knocked off, and the latter was bleeding in both birds.

"The adult birds are tough, but the pullets are very fair eating."

Mr. Cripps writes:—

"The northern part of the District of Sylhet is covered with low 'teelahs' or hillocks, between which run small brooks, the whole being overgrown with dense tree, bamboo, and cane jungle, forming dark, damp retreats, such as are the favourite resorts of this species.

"Here they scratch about amongst the fallen leaves for insects, and towards evening and in the early morning stray into any adjacent patches of cultivation, or are to be found feeding about the roadsides where these lie within the forests.

"Although one may now and then shoot a bird or two, their retiring disposition and the nature of the haunts they affect equally prevent their affording much sport in the localities in which alone I have observed them. To the same causes are due my ignorance of their habits. In their wild state one gets only a momentary glimpse of them, and though the eggs

hatch readily under domestic hens, the chicks somehow cannot be reared, and adults confined, as I have seen many in Sylhet remain to the last as wild as when captured, destroying their plumage, and ultimately, generally, wearing themselves out in their persistent and unintelligent efforts to escape.

"The Khasias, who call them '*Motoora*,' snare numbers with horse-hair nooses.

"On no occasion have I seen more than four birds together; but they are generally seen in pairs."

Later, writing from Khowang in Dibrugarh, he says:—

"Here the *Do-reek*, as the Assamese call it, is very common and far more accessible than in Sylhet. Morning and evening the birds are to be seen feeding on all the roads and paths, and allowing a near approach if the sportsman stoops low and advances sharply.

"Their food consists, I find, of berries, grain extracted from the droppings of horses, all kinds of tender shoots and worms."

THIS SPECIES lays mostly in April and May, but nests may be found towards the close of March and well into June.

My friend Mr. Cripps found a nest on the 29th March 1875 in Sylhet, and caught the female sitting on it. "The nest," he says, "was composed of a heap of dried leaves, a foot in diameter and about six inches in height; the egg cavity was 5 by 4; no lining; the eggs were four in number and perfectly fresh; the site chosen was at the foot of a large tree standing on a piece of flat land between two hillocks."

Again, writing from Khowang, he remarks:—

"On the 22nd March 1879, while cutting forest for charcoal burning, I came across two fresh eggs. The nest was made of dry leaves, which the bird had scraped into a hollow in the ground at the root of a tree, and within six feet of a jungle path, along which my coolies had been passing for days. On that day the men were felling trees all round, and the hen bird did not fly off until the axe was laid on to the tree at the root of which her nest was. There was no lining. The ground around was low and damp."

The only eggs that I have seen of this species were those sent me from these nests by Mr. Cripps; they are of the usual Kalij type, very regular, rather broad ovals (in fact of the usual hen's egg shape), with rather strong and coarse shells, very conspicuously pitted all over with minute pores and with a faint gloss. In colour they vary from pale buff to a warm rich *café au lait*.

In length these few eggs vary from 1·8 to 1·9; and in breadth from 1·45 to 1·5; but, doubtless, a good series would show much greater variations.

OF THIS SPECIES, also, I have but few measurements recorded in the flesh :—

Males (3).—Length, 23·0, 24·0, 24·8; expanse, 29·5, 30·0, 30·4; wing, 9·0, 9·6, 10·0; tail from vent, 9·0, 10·0, 10·75; tarsus, 3·2, 3·25; bill from gape, 1·37, 1·5; spur, 0·75 to 1·0. Weight, 2 lbs. 14 ozs., 3lbs.

Females (2).—Length, 21·0, 22·5; expanse, 26·0, 29·0; wing, 8·5, 9·0; tail from vent, 7·75, 8·5; tarsus, 3·0, 3·05; bill from gape, 1·15, 1·3. Weight, 2 lbs. 6 ozs.

The irides are reddish brown; the legs and feet vary from plumbeous, or leaden blue, to light horny, in some browner, in some more fleshy; the bill greenish horny, paler at tip, dusky towards the base; nude orbital skin crimson.

THE PLATE, as usual, fails to exhibit the natural tints of the bill and legs, but otherwise the picture of the male is fair.

THERE IS some difficulty in discriminating the females of the several Kalij Pheasants, and I cannot say that I think our plates will much facilitate their determination. Dr. Scully, in his note already quoted, has dwelt upon the differences which characterize the female of the Nepal bird, and I will endeavour to explain briefly how the females of the other three species differ.

Generally it may be said that the females of *albocristatus* are lighter, those of *melanonotus* darker, and those of *horsfieldi* more rufescent. In *albocristatus*, the crest of the female, when fully developed, is generally longer and greyer than in either of the other two; the tail-feathers are less rufescent, and much more boldly vermicellated; the pale tippings to the breast-feathers and coverts contrast much less strongly, as a rule, than do the similar tippings in *melanonotus*. In *melanonotus*, the rump and upper tail-coverts, as a rule, harmonize well with the central tail-feathers. In *horsfieldi*, the former are much lighter and more olive, the latter darker and more ferruginous, and thus contrast together strongly. As a rule, the central tail-feathers of *horsfieldi* are almost perfectly plain, and are deep ferruginous; those of *melanonotus* deep brown, with a ferruginous tinge, and feebly vermicellated; those of *albocristatus* olive brown, with only a faint ferruginous tinge, and boldly vermicellated; but none of these points hold absolutely good; and though by bearing *all* in mind any specimen can be discriminated at once, I have failed, after examining a large series, to detect any one single constant difference in the dry skins that can, by itself, be relied on to separate specimens.

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EUPLOCOMUS CUVIERI

THE ARACAN SILVER PHEASANT.

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Euplocamus cuvieri, *Temminck.*

———o———

Vernacular Names.—[Rak, *Aracan;* Yit (Burmese) *Aracan*].

———o———

IT has been customary to consider this species a hybrid, between the Eastern Kalij and the Vermicellated Pheasant.

That it is an intermediate form between these two, and in many respects resembles both, may be freely conceded, but the term hybrid cannot, with any propriety of language, be applied to a permanent species, the sole inhabitant of its class of a vast tract of country in which neither of the species occurs of which it is alleged to be a hybrid.

By hybrids we understand, when speaking of wild animals, a form, the offspring of two parents of different species, not a persistent race occupying a large tract of country, in which parents and offspring are all precisely alike.

It may be that both present many features in common with two other species, but this affords no support for the unscientific theory of inter-breeding or hybridism which has been so constantly put forward in cases like the present.

The true explanation of the cases which this theory is meant to explain is simply this: If, in one region A, we find one form *a*, and in a neighbouring region B, we find a nearly allied form *b*, and somewhere between the two regions, A and B, or where they inosculate, we find a third form, which we will call *c*, intermediate between *a* and *b*, then this form is clearly due, I submit, not to the inter-breeding of *a* and *b*, but to the fact that the physical conditions of existence, which in A determined the form *a*, and in B the form *b*, are at the confines of these regions intermediate in character, and have, therefore, given rise to form *c* intermediate between *a* and *b*.

In this present case, the alleged hybrid is, so far as we know, the sole Pheasant of the class occurring for a length of fully 300 miles in the Aracan Hills. Whether it occurs outside these hills and the forests at their bases, is uncertain. In British Burma it is replaced directly we descend to the valley of the Irrawaddy by *E. lineatus*, but it may extend into

the hilly southern portions of Chittagong and into the western portions of Independent Burma.

It may be useful to specify clearly how this species does partake of the characters of the other two.

In the *males* the entire lower surface is streakless, as in the Eastern or Black-breasted Kalij ; there are no white central stripes to any of the feathers, some of the lateral tail-feathers have nearly lost the white markings. The tips of the neck feathers show glossy blue black patches, similar to those in the Eastern Kalij, though the rest of the feathers are freckled, as in the Vermicellated Pheasant. Everywhere on the upper surface the white frecklings are coarser and further apart than in this latter, and all the lower back, rump, and upper tail-covert feathers, though freckled as in it, are fringed at the tips with white, as in the Kalij. In the *female* the white stripes on the lower surface are greatly reduced in breadth, are buffy in colour, and are almost entirely confined to the breast. The white arrow-head markings of the back and sides of the neck and upper back of the female Vermicellated Pheasant are entirely wanting. Many of the coverts and the longer scapulars exhibit the conspicuous crescentic white tippings characteristic of the Kalij. In other respects, however, the female agrees with that of neither species. The whole back and wings are a more or less rich, rufous-olivaceous brown, everywhere closely freckled with blackish brown. The tail is rufous, pale on the central tail-feathers, deep chestnut on the four exterior pairs, the others intermediate ; the chestnut feathers freckled on the inner webs only ; the others on both webs, with blackish brown.

I HAVE vainly endeavoured to obtain any information as to the haunts or habits of this species.

A certain place has been said to be paved with good intentions, but the broken promises of specimens and information for this work, on the strength of which it was mainly undertaken, must, I should think, have contributed appreciably to that pavement.

I HAVE no measurements, and the only specimens I own, I have never seen, as these were sent home to be figured by Dr. Anderson, who, with the permission of our Zoological Society here, most kindly presented them to me for this work.

THE PLATE has not yet arrived, though I hope it may in time to appear in this volume.

(Slip to face page 202.)

By some unlucky mistake a pair of *E. horsfieldi*, reached the artist's hands, in place of the intended, and widely different, *E. cuvieri.* The consequence is, that the plate facing our article on this latter species, though lettered *E. cuvieri*, is merely a duplicate plate of *E. horsfieldi.* We hope in a future volume to give a plate of the real *E. cuvieri.*

EUPLOCAMUS ANDERSONI

F Waller Chromo-Lith. 18, Hatton Garden, London.

CRAWFURD'S SILVER PHEASANT.

Euplocamus crawfurdi, *J. E. Gray.*

Vernacular Names.—[Yit, *Upper Burma*]

THIS bird is very closely allied to the well-known *E. lineatus*, the Vermicellated Pheasant.

The characteristic points in which typical *crawfurdi* differs from *lineatus*, are, first, the much coarser and bolder character of the markings of the upper surface, which are all longitudinal, more or less parallel to the margins of the feathers, which are entirely free from the fine, more or less transverse; markings or mottling characteristic of *lineatus;* second, in the whole of the central tail-feathers, except just the tip and the margins of the inner webs, being boldly variegated black and white, instead of, as in *lineatus*, almost the whole of the inner webs and the terminal half, at any rate, of the outer webs being white or sullied white, free from markings, and such markings as exist on the basal portions being fine.

I do not attach any importance to the supposed less amount of white striation on the under surface of *crawfurdi*, because I have specimens of *lineatus* in which every single feather of the breast, abdomen, and sides has a more or less broad white shaft stripe, and others again in which only two or three feathers on the extreme sides of the breast show any traces of this.

Very little is known of this species; we procured a single specimen at Dargwin, in the hills at the north-east extremity of Tenasserim proper, immediately south of which it is replaced by *E. lineatus*. It was procured by Dr. Anderson on the confines of Upper Burma and Yunan. How far it extends eastwards, into Karenee, the Shan States, and the north of Siam and China, is unknown.

IN ITS HABITS it probably differs in no respect from the Vermicellated Pheasant, and is, we may conclude, a bird of the hill forests, descending into broken and wooded country immediately at their bases.

WE MEASURED one single specimen in the flesh :—

Male.—Length, 30·0 ; expanse, 32·75 ; tail from vent, 13·5 ; wing, 11·5 ; tarsus, 3·62 ; bill from gape, 1·55. Weight, 2·75 lbs.

The legs and feet were dark pinkish fleshy ; the bill pale bluish horny ; the facial skin deep crimson ; the irides brown.

THE PLATE.—Bill and feet utterly miscoloured, though the very note just given was attached to the specimen sent to the artist. In other respects the plate does indicate to a certain extent the difference between the coarse bold markings of this present species and the excessively fine vermicellations of the next.

OUR PLATE is labelled *E. andersoni;* I consider, with Dr. Sclater, that it should take Mr. Gray's name, founded on one of Crawfurd's drawings. But many consider this identification doubtful, and if it be not accepted, the species will stand as labelled on the plate.

F. Waller. Chromo-Lith. 18. Hatton Garden. London

1/4

EUPLOCAMUS LINEATUS

THE VERMICELLATED PHEASANT.

---o---

Euplocamus lineatus, *Vigors.*

---o---

Vernacular Names.—[Yit, Kayit (Burmese), Synklouk, (Talaen), Phoogyk, (Karen), *Burma.*]

---o---

SO far as is yet known, the Vermicellated Pheasant is confined to Pegu, Tenasserim, north of Tavoy, the south-western portions of Independent Burma, and the north-western portions of Siam.* How far east it goes in Siam is still uncertain, but it has been brought from close to Chieng Mai (Zimmé). It does occur west of the Irrawaddy River in places, in low hills, but not out of the Irrawaddy Valley. Directly the Aracan Yoma is reached, *E. cuvieri* alone is found. How far it extends along the valley of the Irrawaddy into Independent Burma has yet to be ascertained.

IT IS NOT a bird of high elevations ; I have no record of its having been seen even as high as 4,500 feet ; it appears to be most numerous at from 1,000 to 3,000 feet, though it certainly occurs as high as 3,500, and again right down to sea level.

Its home appears to be the thin deciduous-leaved woods, especially those much mingled with bamboos, of the low hills. It is rarely seen in dense evergreen forests or in grass prairies.

It is almost omnivorous, and feeds, according to season and locality, on all kinds of insects, grain, seeds, small jungle fruits and berries, and certain young leaves, green shoots and flower buds.

It is not gregarious, and though a good many may be found in the same neighbourhood, they seem to live quite independently of each other, except in the case of young broods, which keep for some months along with the mother, and pairs during the breeding season.

Whether they are polygamous seems to me very questionable. That the males fight desperately during the breeding season is certain, and that where, owing to casualties and other circumstances, the females preponderate, the males may pay their addresses to more than one is possible, but I incline to believe that normally they pair with one only.

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* It has been asserted to occur in North Cachar, but there is no reason to believe hat it has ever been found there.

They are regular Fowl Pheasants, and with dogs afford a certain amount of sport, but when bagged are no great luxuries for the table. The flesh is white and free from unpleasant flavour ; but rather dry, and in old males tough enough. They rarely, if ever, have any fat about them, and when roasted could hardly, I believe, be distinguished from ordinary Indian domestic fowls.

Writing from Northern Pegu, Captain Feilden says :—" This bird is tolerably common in the hills west of Thayetmyo, but appears to be unknown to any but Burmese It seems to require rock and very steep hill-sides, covered by long grass, for shelter, and flat alluvial soil, bare of grass and covered with brushwood and young trees, for feeding ground ; in fact, its feeding ground is precisely the same as that of the Black Woodpecker, and I have several times lost a bird of each species by being undecided which to fire at.

" An old male is a most extraordinary looking bird. The tail only is seen moving through the long grass, and I invariably thought at first that it was some new porcupine or badger, or some animal. The note, too, adds to the deception ; it reminded me a little of the cries of young ferrets.

" They run with great rapidity, but rise readily before a dog, and would not be difficult shooting but for the steepness of the hill-sides on which they are found, and the nature of the soil—gravel just stuck together by the material that forms the petrified wood so common there. This, covered by grass or dried bamboo leaves, makes the footing so slippery that any attempt to raise my gun hurriedly generally brought me to my knees.

" These birds feed a great deal on the young shoot of a kind of Orchis, which rather resembles a large Roselle flower, and its juicy leaves enable these Pheasants to live for some time far away from water ; but in the middle of the hot-weather they are forced to retire from the Thayetmyo Hills by the long grass being burnt. They return at the beginning of the rains. They hatch in August."

Mr. Oates remarks :—" This species is common throughout the whole of Pegu east of the Irrawaddy.

" It is rare or common just in proportion as the country is level or mountainous. In the plains or undulating portion of Upper Pegu it will be met with in small numbers, if the ravines and nallas are sufficiently precipitous to suit its taste ; but in these places, at the best, only one or two will be shot in a long morning's work. It is not till we get to the foot of the hills that this Pheasant can be said to be common. Here the nallas, with their pools of water and rocky beds, are particularly favourable to it. As we mount higher, it increases in numbers to such an extent that it is no difficult matter to knock over half-a-dozen in a morning while marching, and that without leaving the path.

"This Pheasant is averse to all cultivation, and shuns even the *yahs* or hill gardens of the Karens, though these may be several miles from the nearest *tay* or village. It must have thick cover, even while feeding. In the mornings it comes out to feed on the ridges, where the jungle is a trifle less thick than in the valleys. At 9 or 10 o'clock it descends into the valleys, and after drinking retires into some small secondary water-course for its mid-day siesta. At this period of the day seven or eight may be found together if it is not the breeding season. When feeding, they go singly or in pairs. Their food is very varied. Ants, both white and black, are eagerly sought after; the former are an especial weakness of our bird, and the only food on which it thrives in captivity. During the hot-weather Pheasants eat the fig of the Peepul ravenously; and I have shot birds with nothing but this food in the stomach.

"The breeding season begins about the 1st March, and by the end of the month all the hens have commenced laying. It is during this month only that the male makes that curious noise with his wings which seems peculiar to the Kalij group. It may be imitated very fairly by holding a pocket-handkerchief by two opposite corners and extending the arms with a jerk. This noise, made only by the male, is undoubtedly a challenge to other cocks. I have frequently hidden myself near a bird thus engaged, and on two occasions shot cock birds running with great excitement towards the sound.

"The chickens, as soon as they are hatched, are very strong on their legs, and run with great speed. I was fortunate enough to capture portions of four broods. It is astonishing in what a short time the little birds make themselves invisible. It is difficult to secure more than two out of one batch. It is a case of pouncing on them at once or losing them. The mother is a great coward, running away at the slightest alarm, and thus contrasting very unfavourably with the Jungle Fowl, which keeps running round and round the intruder with great anxiety till her young ones are in safety.

"The young are very difficult to rear. From some cause or other they become paralysed, lose the use of their legs, languish, and die.

"This Pheasant is not very shy; on the contrary, it is rather tame; but it has the habit of sneaking quietly away, and very few birds will be seen by one who does not know its peculiarities. It never takes wing unless suddenly surprised, when it will skim across the valley and alight again as soon as possible. Its only call is a low chuckle, frequently uttered both when alarmed and when going to roost."

Davison notes:—

"This Pheasant occurs not uncommonly about Pahpoon, the north-east district of Tenasserim and its neighbourhood, and it extends as far, or nearly as far, south as Tavoy. It does not

occur anywhere about Mergui or to the south of that place. Not long ago it used to occur in the immediate neighbourhood of Moulmein, but all seem to have been trapped or shot off now.

"They come continually into the open to feed about rice fields and clearings. They are shy, and usually run in preference to flying when disturbed, except when put up by a dog, when they immediately perch. Captain Bingham tells me that on bright moonlight nights they constantly come out into the clearings. Their food consists of grain, seeds of various kinds, young leaves and grass, grubs, and insects.

"They seem to prefer bamboo, or moderately thin tree jungle, to dense forest. They are found singly, in pairs, and sometimes several together; when disturbed, they utter a peculiar clicking noise. The Burmans trap numbers of males with the aid of a decoy bird, which is taken to the jungle and fastened by the leg to a peg and surrounded by a circle of nooses; the decoy bird calls and makes a peculiar buzzing sound with his wings, and any males within hearing are attracted by the sound, and, rushing up to attack the decoy bird, are caught in the nooses. The birds are very pugnacious, and even in a wild state are continually fighting with each other."

It is, I notice, a mistake to suppose that this plan of capturing the males can only be adopted in the breeding season. The tame male can always be induced to "buzz" by imitating the sound from some place hidden to him. This the Burmans do by twisting very rapidly between the palms of the hands a small stick, into a split at the top of which a piece of stiff cloth or a stiff leaf has been transversely inserted.

Nor is it a fact that this peculiar noise is only made by the wild birds during the breeding season, or that it is as rare to hear it as Colonel Tickell makes out in his amusing notice of it that I shall now quote. On the contrary, Davison tells me that he has heard it fifty times, and several times in both December and January.

Colonel Tickell says:—

"The noise in question is the most extraordinary and the most unnatural, that is to say, the most unbirdlike, I have ever heard. I was one day, in the cold season of 1859-60, looking out for a rhinoceros in the hills which skirt the eastern limits of the Tenasserim provinces. Some very recent marks of the animal were pointed out to me by my Karen guides, and following the traces through the jungle down the hill-side, I was at last brought up by a profound ravine. While some of my party left me to reach the bottom of this dell by a more circuitous and practicable route and I remained perched on the steep declivity, a singular reverberating sound reached my ears, proceeding apparently from the deep valley below me. It was a tremulous subdued noise, as if the mountains were shuddering in an ague fit, and I, who was thinking of nothing but rhinoce-

roses at the time, and had made up my mind to see a host of them emerge from the dense jungle as the result of so strange a symphony, was utterly amazed by my Karen companions telling me the noise was made by the "Yits" (Hill Pheasants). I could not help smiling at such a singularly literal illustration of the fabled mountain in labour with the *nascitur ridiculus mus* enacted by these funny birds. I have only on that occasion heard this extraordinary sound, though for weeks at a time journeying and living in forests abounding in Hill Pheasants."

Darling, writing from the Tenasserim Hills in the Moulmein District, says:—

"This bird was also very common at Thowngyah,—its habits the same as those of the Grey Peacock Pheasant,—feeding in thick clumps of bamboos and bushes in small parties. I have never seen them in the open. Unlike the Peacock Pheasant, however, this bird, when disturbed, at once *flies* away, sometimes getting into a tree, but generally with a noiseless and low flight a long way into the jungle; when roused they always emit a whistled 'yit.'

THIS SPECIES breeds from almost sea level up to an elevation of at least three thousand feet.

The season varies according to locality and elevation, and a fresh egg or two may be found in the first week of March, and a clutch of eggs not yet hatched off up to quite the middle of May.

Apparently in some localities they breed much later, or perhaps they have two broods in the year. Captain Feilden has seen young, recently-hatched chicks, at Thayetmyo in August.

The nest is either a slight hollow scratched in the ground and thinly lined or sprinkled with dry leaves and perhaps a few feathers, or it is a depression scratched out or indented into some natural heap or bed of dry leaves.

The nest is generally placed at the foot of some tree, or beside some fallen monarch of the forest, or in some dense clump of bamboo. Generally it is well concealed, but at times nests are met with in comparatively very exposed positions.

Seven or eight is the usual complement of eggs, but natives talk of finding fourteen and fifteen at times, so that possibly occasionally two hens may lay in the same place.

Writing from Tenasserim, Captain Bingham says:—

"On the 16th March, while pushing through some thick bamboo jungle, I found at the foot of a Pynkadoe tree *(Xylia dolabriformis)* a nest of this handsome Pheasant, and managed to shoot the female by hiding close by. The nest contained seven eggs, slightly set, placed in a little hollow that had been scratched in the ground and lined with leaves and a few feathers. The eggs are a pinkish stone colour, minutely pitted all over."

Mr. Oates says, in regard to their nidification in the country between Thayetmyo and Tounghoo :—

"The female makes no nest, but chooses a hollow on a bank-side, generally at the foot of a bamboo clump. The dead leaves, which have accumulated to the depth of three or four inches, are hollowed out by the bird, not purposely, I think, but merely by the pressure of the bird's body. The first nest I found in 1871 contained six fresh eggs. This was on the 24th March. The second nest, found on the 8th April, contained seven eggs, slightly incubated.

"A third nest, found on the 15th April 1873, contained seven eggs, hard-set. The colour is a rich cream, with numerous small dots of chalky white."

All the eggs that we have obtained are of the usual hen's-egg shape ; they are of course unspotted, and vary from a pale yellowish to a warm pinkish *café au lait* colour. The shell, though fine, is very full of pores, and these in some eggs being filled with a whitish chalky substance, give them the effect of being stippled all over with white specks. None of the eggs that I have seen have had any very perceptible gloss, and as a rule they seem to be, for game birds of this class, very dull eggs.

The eggs vary from 1·81 to 2·03 in length, and from 1·4 to 1·52 in width, but the average of nearly thirty eggs is 1·97 by 1·46.

SPECIMENS MEASURED in the flesh varied as follows :—

Males.—Length, 25·5 to 30·0; expanse, 29·75 to 32·75 ; tail from vent, 10·0 to 13·5 ; wing, 9·25 to 11·5 ; tarsus, 3·0 to 3·62 ; bill from gape, 1·32 to 1·55. Weight, 2·5 to 3 lbs.

Females.—Length, 20·1 to 24·0 ; expanse, 24·75 to 28·0 ; tail from vent, 7·8 to 10·0 ; wing, 8·5 to 9·5 ; tarsus, 2·9 to 3·4 ; bill from gape, 1·35 to 1·5. Weight, 2 to 2·5 lbs.

The legs and feet were generally pinkish fleshy or pinkish brown ; sometimes a sort of bluish horny or plumbeous brown.

In the male, the spurs are dark at the base, whitish horny at tip. In the males, the bills are pale bluish or greenish horny, darkest at base. In the female, pale horny brown. The irides seem to vary a great deal ; some were brown, of different shades, usually more or less tinged with red ; others are noted as very pale pink, or even fleshy white ; in fact, all the soft parts in this species seem to vary very greatly, doubtless according to age, season, and sex. In both sexes the facial skin is blood red and the exposed portion of the eyelids pale plumbeous or ashy blue. The cere is greyish in the male, blackish in the female.

"In the chicken from the egg," says Mr. Oates, "the top of the head is fulvous, albescent on the forehead. There is a stripe from the base of the upper mandible to the eye, also a black line from

the posterior corner of the eye, passing under the ear-coverts, and terminating at the back of the head. The whole lower surface is white, with a tinge of fulvous ; upper neck, back, and rump, black. Two conspicuous fulvous white lines run from the shoulder to the root of the tail along the sides of the body, one on either side ; quills brown, much freckled with fulvous ; and the greater coverts largely tipped with white.

" The adult plumage is assumed at the autumn moult, the white streaks on the breast and belly disappearing with age, and being nearly entirely absent in very old cocks."

THE PLATE, viewed from a distance, gives a tolerable idea of both sexes.

F Waller Chromo Lith. 18 Hatton Garden London.

1/6

EUPLOCAMUS VIELLOTTI

THE FIREBACK.

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Euplocamus vieilloti, *G. R. Gray.*

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Vernacular Names.—[Knock-wah (Siamese), *Bankasoon;* Mooah-Mooah (Malay) *Malacca.*]

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IT is only in the southernmost portions of Tenasserim *viz.*, south of the Town of Tenasserim (and not so high up as Mergui as has been asserted), that the Fireback occurs within our limits.

Further south we found it throughout the western half (the eastern we have not explored) of the Malay Peninsula, from Renong to Johore.

It is also said to occur in Sumatra, but it seems to me possible that when more Sumatran specimens are compared they will prove to belong to a distinguishable race.

VERY LITTLE is known of this species; indeed, Mr. Davison, the chief of my collecting establishments, is the only European, I believe, who has observed or shot it in a wild state, and I shall, therefore, quote his remarks on it, from our account of the "Birds of Tenasserim." He says:—

"These birds frequent the thick evergreen forests in small parties of five or six; usually there is only one male in the party, the rest being females, but on one or two occasions I have seen two males together; sometimes the males are found quite alone. I have never heard the males crow, nor do I think that they ever do so; when alarmed, both males and females have a peculiar sharp note, exceedingly like that of the large Black-backed Squirrel *(Sciurus bicolor).* The males also continually make a whirring sound with their wings, which can be very well imitated by twirling rapidly between the hands a small stick, in a cleft of which a piece of stiff cloth has been transversely placed. I have often discovered the whereabouts of a flock by hearing this noise. They never come into the open, but confine themselves to the forests, feeding on berries, tender leaves, and insects and grubs of all kinds, and they are very fond of scratching about after the manner of domestic poultry, and dusting themselves. When disturbed, they run rapidly away, not in different directions, but all keeping much together;

they rise at once before a dog, getting up with a great flutter, but when once well on the wing, fly with a strong and rapid flight ; they seldom alight again under a couple of hundred yards, and usually on the ground, when they immediately start running.

"I noticed on one occasion a very curious thing. I had stalked an Argus, and while waiting to obtain a good shot, I heard the peculiar note, a sort of "*chukun*, *chukun*," followed by the whirring noise made by the male Fireback, and immediately after saw a fine male Fireback run into the open space, and begin to chase the Argus round and round its clearing. The Argus seemed loath to quit its own domain, and yet not willing to fight, but at last, being hard-pressed, it ran into the jungle. The Fireback did not attempt to follow, but took up a position in the middle of the clearing and re-commenced the whirring noise with his wings, evidently as a challenge, whereupon the Argus slowly returned, but the moment it got within the cleared space, the Fireback charged it, and drove it back into the jungle, and then, as before, took up his position in the middle of the space and repeated the challenge. The Argus immediately returned, but only to be again driven back, and this continued at least a dozen times, and how much longer it would have continued I cannot say, but a movement on my part attracting the birds' attention, they caught sight of me, and instantly, before I could fire, disappeared into the jungle. The Argus never made the slightest attempt to attack the Fireback, but retreated at once on the slightest movement of the latter towards it, nor did I see the Fireback strike the Argus with either bill, wings, or spurs."

THEY APPEAR to breed during the monsoon, but I know nothing of their nidification. The only egg we obtained, laid in July by a captured hen, is simply a large game fowl's egg ; fairly smooth, though with but little gloss ; everywhere minutely dotted with inconspicuous pores, and of a rather pale and delicate *café au lait* colour.

It measures 2·25 by 1·68.

THE FOLLOWING are the dimensions and colours of soft parts recorded in the flesh of a large series of both sexes :—

Males.—Length, 27·5 to 29·0 ; expanse, 35·0 to 38·5 ; tail from vent, 10·0 to 10·5 ; wing, 10·75 to 12·12 ; tarsus, 4·25 to 4·4 ; bill from gape, 1·6 to 1·8. Weight, 4·25 to 5 lbs.

Females.—Length, 23·0 to 24·0 ; expanse, 30·0 to 33·0 ; tail from vent, 7·5 to 9·0 ; wing, 9·7 to 10·75 ; tarsus, 3·5 to 3·75 ; bill from gape, 1·6 to 1·7. Weight, 3 to 3·5 ℔s.

Legs and feet are vermilion red ; claws, and in the male the spurs, whitish ; the back of the tarsi in the female fleshy ; in the male the entire bill is whitish or horny white and cere

brownish ; in the female, the upper mandible is dark horny brown, the lower horny white ; the irides clear pale red ; facial skin smalt blue, bright in the male, rather duller in the female.

THE PLATE does not show the legs of the male as the bright vermilion red they really are.

The female is not quite the colour she is represented, but more of a chestnut.

The name is misspelt.

THE GENUS *Euplocamus* contains many species ; all, I believe, belonging to the hilly regions of Northern and Eastern India, Burmah, Malayana (including Borneo and Sumatra), Siam, China, and the countries intervening between these two latter.

This genus has been divided into several sub-genera, which I have not adopted. Roughly, they may all be classed as—

(1.)—Kalij ; of which only four species are known, all of which have been dealt with above.

(2.)—Silver Pheasants ; of which also four are known. Three of these, the Aracan, the Vermicellated, and Crawfurd's Pheasant have been treated of already ; the fourth is the well-known Silver Pheasant of China.

(3.)—The Firebacks ; of which six or seven species are known ; three or four of much the same type as *vieilloti*, *e.g.*, *prælatus* from Siam, *nobilis* from Borneo, and *swinhoi* from Formosa, and two of a somewhat different type, with short, square, hen-like tails in both sexes, *viz.*, *erythrophthalmus* from the Malayan Peninsula and Sumatra, and *pyronotus* of Borneo.

F. Waller, Chromo Lith. 18, Hatton Garden, London.

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CALLUS FERNGINEUS.

THE RED JUNGLE-FOWL.

———o———

Gallus ferrugineus, *Gmelin.*

———o———

Vernacular Names.—[Jungli moorghi, Bun moorghi, *Upper India;* Bunkokra, Bunkukra, Bun-kookoor, (Bengali, &c.), *Sundarbans, Sonthal Country, Assam, &c.;* Natsu-pia (Bhutia), Pazok-tchi (Lepcha), *Sikhim, Duárs;* Beer-seem (Koles); Gera-gogor (Gonds); Lall, *Chánda District;* Tanquet, Tanghet, *Burmah;* Ayam-ootan, *Malay Peninsula;*]

———o———

THE Red Jungle-Fowl is, as the latter portion of its name imports, a true denizen of the jungle, and most especially of jungle in the vicinity of scattered cultivation, at or near the bases of hills, which keep it comparatively well watered throughout the year.

It is entirely wanting in the dry, level, alluvial plains and semi-deserts of Upper India, and even in better watered localities is absent from the more richly cultivated tracts, and only straggles into cultivation which is in the neighbourhood of jungle.

It is more or less abundant throughout the lower ranges of the Himalayas,* the Dhúns, Tarais, and submontane districts, and the Siwáliks from the southern outer ranges of Kashmir to the extreme head of the Assam Valley beyond Sadiya.

Throughout the whole of Assam, including the less elevated portions of the Gáro, Khási and Nága Hills, Cachar and Sylhet, the whole of Eastern Bengal, including the Sunderbans, Arakan, Pegu and Tenasserim, it is in all suitable localities common. Again, in all the hilly portions of Western Bengal, from the Rajmehal hills, through Midnapore, and westward of this, through the whole of Chota Nagpore, and the northern and eastern portions of the Central Provinces, it is the only Jungle-Fowl that is found. It is common along the Kymore range, and extends northwards to the neighbourhood of Punnah and Chairkhari, and southwards on to the Maikal or Amarkantak ranges.

Southwards and eastwards of these latter it occupies the whole country north of the Godávari, Orissa, the Tributary Mahâls, Ganjam, Vizagapatam, and part of the Godávari District, Joonagurh, Kareall, Nowagurh, Jeypore and other Feuda-

* It extends in places far into the interior of the hills along the valleys of rivers. Thus Colonel Fisher writes:—"Last year, to my surprise, I came across several of them in a low valley on the banks of the *Nayar river* in almost Central Garhwál, and at a distance of some 30 or 40 miles from the foot of these hills!"

tory States. It occurs also immediately below Pachmarhi, but the exact line of definition of this species and the Grey Jungle-Fowl between Pachmarhi and the Amarkantak range is uncertain, as I have as yet been unable to learn what species, if any, occurs in the hills about Seoni, Kooraiia, Deogarh and Chhindwára.

Captain Temple and Mr. Ellison, the Deputy Commissioners of Seoni and Chhindwára, are of opinion that neither species occurs in their districts.

As bearing on the distribution of this species in the Central Provinces,* I may note that Forsyth, the well-known sportsman, stated that its range was "precisely conterminous in the hills south of the Nerbudda with that of the Swamp Deer *(Rucervus duvauceli)*, and the sal-tree *(Shorea robusta)*†. The western limits of the great belt of sal forests which covers so large a portion of Eastern India is in the Mandla District, and there the Swamp Deer and Red Jungle-Fowl also occur. The sal is not found in Western India; but there is one spot in the Deinwa Valley, just under Pachmarhi, where a patch of sal forest occurs, and there, and there only, the Red Jungle-Fowl and the Swamp Deer are met with, although the nearest spot to the eastward where the three again recur is 150 miles distant." Forsyth added that the two kinds of Jungle-Fowl met on the plateau at Pachmarhi and that he had shot both there.

It is unknown in Káthiáwár, Cutch, Sind, Rajputana, and the Punjab except in the immediate neighbourhood of the Himalayas and the Siwáliks, and equally so, except in similar situations, in the greater portions of the level fully cultivated

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* As further illustrating this much-disputed question, I may quote what my friend Mr. R. Thompson, Deputy Conservator of Forests, Central Provinces, writes :—

"The Red Jungle-Fowl is found nowhere in the Chánda District proper as far as my personal observations have extended, nor have I heard of its existence from native shikáris and others. It is found in the Godávari Valley as low down as the hills north of Rajmandhry, but not above Dumagudium, which is now just beyond the limits of the Central Provinces and within the Madras Presidency. In Central Bastar, between 18° and 19° N. Lat., it was common on the Baila Díla Plateau. I met with it in the valley of the Savery river which drains a part of Jeypore, and it may probably extend westwards to as far as the Indrávati river, but I have no certainty as to this last point. Dr. Jerdon describes its existence in the valley of the Indrávati, where I have certainly not met with it, and must therefore conclude that his description refers to some point very much higher up, and *eastward* of any place in the valley that I have visited."

Again he writes :—

"I was in the Eastern Zemindaris of the Chánda District a very short time ago, and met with the Red Jungle-Fowl in great abundance in the Zemindaris of Pánabáras, Kotgal, Korácha, &c.; in fact, everywhere on the high table-land east of the Wainganga river. Just below the Ghâts, the Grey Jungle-Fowl was met with, but not a single specimen was to be found on the high ground already in the possession of the other species. I traced the occurrence of the Red Jungle-Fowl down as far south as the Zemindaris of Omdhee; south of that, it was again replaced by the other species.

† But note that the Swamp Deer occurs in Baháwalpur and Sind, where neither sal trees nor Red Jungle-Fowl occur.

North-West Provinces, though it occurs in the hilly southern portions of the Mirzapore District. Further, it is wanting throughout the major portion of the deltaic districts of Lower Bengal, and in Behar except in the northern submontane tracts.

Outside our limits, the Red Jungle-Fowl occurs throughout the western half of the Malay Peninsula, right down to Johore at its southernmost extremity, and it is also common to this day in all suitable localities in the jungles of Sumatra.

It does not occur in Borneo, and I very much doubt whether its natural range extends beyond Sumatra in *this* direction.

But it is claimed as an inhabitant of all kinds of other localities, Java, Timor, Lombok, Celebes, the Philippines, and Hainan, those from the latter belonging to the Indian, from all the former to the Malayan and Burmese race.

My belief is that into all these localities they have been imported. All over the Malay Peninsula and India, domestic fowls are to be seen barely distinguishable from the Red Jungle-Fowl of these countries, and there can be no doubt that any such which ran wild would very soon, in the face of an environment similar to that of their original habitat, revert to the wild type. Nothing can be more certain than that the fowls on the Great and Little Cocos must have been introduced, yet they are now perfect *Gallus ferrugineus*. Similar Jungle-Fowl occur at Tahiti, and it is said other islands in the South Seas, and the Bonin Isles, which no one can accept as being within the possible natural range of this species.

Then again Severtsov enumerates them as occurring throughout Western Turkestan. I cannot ascertain, from the abstract translation of his work which appeared in the *Ibis*, whether he means that they are wild there; but if so, they have certainly *run* wild. They do not cross the Himalayas; they do not occur in Yarkand, in Kabul or Persia, and Turkestan cannot possibly be included within their natural range.

On the other hand, they do occur in the westernmost portions of Siam, and not improbably spread throughout this latter country into Cochin-China.

I have referred to the Indian and Burmo-Malayan races of this bird. The plumage of the latter is said to be redder, and taking a large series, there seems some truth in this, though individual birds from Dehra Dún and Johore, for instance, can be entirely matched as regards plumage, but in the Burmese and Malayan birds, the small ear lappet is invariably *red*, whereas in the Indian it is almost equally invariably *white* or *pinky white*.

VERTICALLY THIS species ranges from sea level to 5,000 feet elevation, but like many other species they are generally to be found lower down in the cold season, and are rarely to be met with above 3,000 feet, except during the hot season.

Their habits have been so often and so well described that there is really nothing new to be said about them. Jerdon tells us that "the Jungle-Fowl is very partial to bamboo jungle, but is found as well in lofty forests and in dense thickets. When cultivated land is near their haunts, they may, during the harvest season, and after the grain is cut, be seen morning and evening in the fields, often in straggling parties of ten to twenty. Their crow, which they give utterance to morning and evening all the year round, but especially at the pairing season, is quite like that of a Bantam Cock, but shorter and never prolonged as in our domestic cocks.

"When detached clumps of jungle or small hills occur in a jungly district where these Fowls abound, very pretty shooting can be had by driving them by means of dogs and beaters; and in travelling through a forest country, many will always be found near the roads, to which they resort to pick up grain from the droppings of cattle, &c.; dogs will often put them up, when they at once fly on to the nearest trees. Young birds, if kept for a few days, are very excellent eating, having a considerable game flavour."

Sometimes when thus beating for Jungle-Fowl you meet with odd surprises. It was in April 1853, in the good old days of palki dâk from Meerut to Mussooree. Three nights we used to make of it when ladies were of the party, and the close of the second night brought us to the Kheree Dâk Bungalow, in broken jungly ground just south of the Siwáliks. After breakfast I went out to look for Jungle-Fowl, luckily with a rifle (a heavy 2 oz. band spherical ball) in case of seeing Cheetul. We beat a lot of low jungle grass and scattered bushes, and I had got a Partridge and a Jungle Hen, when I turned into a very likely looking nalla, about 80 feet deep, with sloping well-grassed sides, and at the bottom a narrow perpendicular-sided water channel about four feet deep and three feet wide, cut through the boulder clay. In this channel I walked with one or two men along the slopes on either side, and one or two above, all a little behind me; suddenly there was a shout on my left, and instantly a tremendous grunting; as I seized my rifle from the shikári behind me, four black heads showed through the grass immediately above me. I could not get out of the wretched water-course, which was nearly up to my armpits, and without one second's hesitation one of the bears (the old female as it proved) came down upon me like a thunderbolt. I got my first barrel off when she was about ten yards from me; the second let itself off as her chest struck the muzzle, and then I was knocked over, half stunned and nearly crushed to death. I don't know exactly how it all happened, but I found myself on my face, hardly able to breathe; my head, arms and body pinned down by the massive motionless (luckily for me) *corpse* of lady Bruin. Seeing that the bear was quite dead, my

shikári and a good pahári bearer I had soon pulled her off and released me, a mass of blood, a good deal cut and bruised, but not really hurt; my first bullet had gone straight through her from stem to stern (2 oz. hardened bullet and six drams of powder), the other had gone right through the heart and come out behind the ribs on the left side.

It will be well for griffs (as I then was) to bear in mind that, in the Sub-Himalayan ranges at any rate, where Jungle-Fowl are common, there bears and tigers are not unlikely to be met with, and that they should never beat for Jungle-Fowl in such situations on foot, without a rifle in trustworthy hands behind them, and never allow themselves to be caught in such a trap as that in which I had stupidly placed myself.

Beavan says:—

"The best shooting I ever got at this species was at Jalpáiguri, where the nallas, or beds of streams, in the neighbourhood, which are common in that country, and filled with jungle, gave cover to very many of these birds. When put up by beaters they fly out at a considerable pace, and require a good knock-down blow to bag them. They run, too, a great deal. In the Manbhoom district the native shikáris used to get many of them by placing corn near some water in the half-dried-up beds of streams, and then shooting them when they came there both in the early morning and evening to eat and drink."

Colonel Tickell remarks:—

"It is off the alluvion, in the dry, stony jungles between Midnapore and Chota Nagpore, that the Jungle-Fowl are met with in the greatest numbers. In favourable situations, such as narrow strips of cultivation in the woods after the crops have been reaped, I have seen as many as twenty or thirty together gleaning about in the stubble; and where the country is thinly inhabited they will, in twos and threes, advance pretty boldly into the open. On such occasions they do not appear to plant sentries like the Crane and Wild Goose, but are at all times excessively timid and wary. When approached in open spots, far from covert, they take wing as readily as Partridges, springing with a loud flutter, and flying steadily and strongly to the jungle, with rapid beats and alternate sailings of their wings. They alight generally within the edge of the covert, and then run so long and swiftly as to render it quite hopeless to follow them. There is no bird more difficult to approach, or even to see, when in the jungle. The cocks may be heard of a morning or evening crowing all round, but the utmost precaution will not, in most cases, enable the sportsman to creep within shot or sight of the bird. The hen, too, announces the important fact of having laid an egg with the same vociferation as in the domestic state, but is silent ere the stealthiest footstep can approach her hiding-place, and, gliding with stealthy feet under the dense foliage, is soon far away in the deep recesses of the

jungle. To a stranger it is not a little curious to hear the familiar sounds of our farmyards issuing from the depths of the wild forest.

"This bird must be sought in all jungly country which is partly cultivated; and where paddy fields extend in long strips into the forest, two sportsmen walking one on each side just within the cover, with a line of beaters between them, can enjoy very pretty shooting. The fowls rise from the stubble and fly into the wood, passing over head, and the sport resembles Pheasant-shooting in England, the flight and size of the birds being pretty similar. When the fields have been cleared of the fowls, the shooting may be continued with success in the woods if they be pretty open and the sportsman furnished with spaniels the sight of which forces the birds to tree, from whence very pretty snap shots may be obtained, as they will often rest on a high branch till the sportsman has arrived underneath before taking wing again. Both cocks and hens make a desperate cackling and flutter when thus roused up by dogs, and I know of no shooting which requires greater nerve and steadiness. If there are no dogs the birds will not tree, but run slyly and silently along and are seen no more, unless you be mounted on an elephant, when it is easy enough to *pot* them, should you be so minded, as they skulk under the brushwood. Like the Phasianidæ, wild poultry are *omnivorous*. They are not subject to migrations, even to the extent to which Pea-Fowl shift their quarters; but in the hot season and the rains they retire deeper into the woods, the cultivated tracts no longer affording food, while the sylvan recesses provide seclusion and shelter for breeding."

To a certain extent the Jungle-Fowl *is* omnivorous, and *will* eat not only grass and young shoots and flower buds, and seeds and grain of all kinds, but worms and grasshoppers and beetles and small land shells, but they are preferentially graminivorous, and I have examined scores which had eaten absolutely nothing but grain.

In the autumn, after the millet fields have ripened, they grow very fat on this grain, and the birds of the year are then *really* good eating, but, as a rule, the birds one shoots (be it confessed with shame, for it *ought* to be a close season) from March to June, tiger-shooting in the Tarai, when, the day's sport over, one turns homeward towards the tents, are no whit better than ordinary village fowls.

Captain Baldwin, the well-known author of the "Game of Bengal," tells us that—

"The Jungle-Fowl is generally found in very thick jungle bordering rivers like the Sarda in Pilibhít, specially when the banks of streams are much cut up and intersected by ravines with thick patches of overhanging bushes; wooded islands in rivers, near the foot of the hills, are also likely spots.

"In the early morning, or towards evening, the birds come out from the dense thicket, where they retire during the heat of the day to feed near the edge of the forest. They like to scratch about at the back of old cattle-sheds, and where crops grow close to the jungle side will enter the corn fields to feed. In some places, where the borders of the forest are much broken and irregular, and the villagers have cultivation here and there between patches of wood and bushes, I have seen capital bags made by a couple of guns, three or four beaters, and a few bustling spaniels. The plan is this: to beat out strips and patches separately, and make a corner here and there, placing the guns in the first instance between the patch of standing crop about to be beaten, and the forest towards which the Jungle-Fowl when flushed are certain to make. The birds finding their retreat cut off, and pushed hard by men and dogs, are forced to take flight, and when well on the wing offer as fine a shot as a sportsman could desire."

Col. Williamson, Inspector-General of Police in Assam, remarks:—

"The Red Jungle-Fowl is found in the Gáro Hills, and in all the Assam plains districts. I shot the bird beyond Sadiya the other day. It is a permanent resident in Assam; it is found in bamboo and tree jungle, and is very often numerous near villages. In the low hills near Súsúng in the Mymensing District of Bengal, I have had excellent sport with these birds. I had the hills thoroughly beaten by beaters, the guns being carefully posted across the line of flight of the birds. I have shot 10 to 12 couple in an hour's shooting in this way. The best time for this sport is just at the season when the cold weather rice crop is ready for the sickle; say, during the month of December and early in January."

From Khoolna, Mr. Rainey writes:—

"I have found this species here and there in small numbers, in that tract of swampy forest country lying between the estuaries of the Hooghly and Megna, and known as the Sundarbans.

"I have never found them in the dense grass or reed jungle. They appear to stick to the forest, where they roost on the branches, selecting the most horizontal ones they can find.

"The cackling of the female, though it is slightly sharper, much resembles that of the common domestic hen of Lower Bengal; and she appears to be always similarly noisy after depositing her egg. The male gives forth his cock-a-doodle-do quite as lustily, but in somewhat shriller tones than his representative of the village poultry-yards, and where human habitations at which fowls are reared exist adjoining the forest, it is most difficult to distinguish between the crows of *tame* and *wild* Chanticleers as they 'proclaim the coming morn.'

"Their principal food in the Sundarbans is insects, especially, I should say, the *larvæ* of termites or white ants, which abound there. Grass seeds also doubtless afford them some subsistence. The majority rarely have an opportunity of feeding on grain—only such few of them as chance to dwell near one of the rare and isolated patches of cultivation

'Rari nantes in gurgite vasto'

ever see grain in these virgin wildernesses. It must, however, be admitted that those which do thus get a chance of partaking the luxuries of civilization evince the greatest partiality for them, and regularly every morning and evening make a raid on the rice fields near harvest time.

"The best way of shooting these birds here is by proceeding morning and evening along the edge of the forest between it and the rice fields. The sportsman will thus flush two or three coveys of them, and secure a few brace. The largest bag that could be obtained by a single gun would hardly be more than three or four brace.

"Very few cultivators—there are no professional bird-catchers in the Sundarbans—attempt to snare the Jungle-Fowl, and they do so only occasionally. They catch them in nooses, using a *tame* decoy bird to allure the wild ones. The decoy bird is tethered in an open space close to the forest, with the nooses placed round it and grain strewn about. The call of the decoy bird—and it is always in a defiant tone—attracts the wild fowl, and generally the males come forth to do battle and are snared, or the hens to eat the grain, and are similarly secured. I have never seen birds thus captured when mature, tamed or even kept alive in confinement for any time, as they obstinately refuse to eat, and pine away and die.

"I may add that the Jungle-Fowls in the Sundarbans appear to be descended immediately from domestic fowls, which used to be let out there in considerable numbers by superstitious wood-cutters to propitiate the sylvan deities—a practice still prevailing to some extent—and I have shot these birds there in different stages of transition. This is interesting, as we evidently thus find the domestic fowl reverting to its pristine condition, for the Red Jungle-Fowl is undoubtedly the origin of our tame varieties of fowl. I had a couple of chicks, produced from eggs of wild birds set under the domestic fowl, and they remained contentedly in the poultry-yard, and freely bred—they were both hens—with the tame fowl. The progeny were in appearance midway between their parents, and exactly similar to some I had shot in the Sundarbans. About that time the cyclone of 1867 swept over the place I was residing at, and of course put a premature end to the varied denizens of the poultry-yard, hybrids included. I soon afterwards left my abode in the wilds of the Sundarbans, and have had no opportunity since of continuing the experiment."

I am not going to discuss the problem, on which so much has been written, as to whether all our domestic poultry really spring exclusively from the Red Jungle-Fowl or whether other wild stocks have contributed a strain. The discussion is perfectly profitless, because the problem is perfectly insoluble, since every trait or detail of plumage or of colour or shape of soft parts which may be adduced as proving the intermixture of other wild species (and there are many breeds in which such appear) may be equally explained on the assumption that they are instances of attavism, and are derived through the Red Jungle-Fowl from the common stock out of which all existing species of Jungle-Fowl diverged.

But looking to the geographical position of the Sundarbans, at the apex of the Delta, and its very recent origin, I should not be surprised if Mr. Rainey were right, and *all* the Jungle-Fowl there found were really, as a great number undoubtedly are, the progeny of tame races ; in which case these Sundarbans birds furnish another illustration of the readiness with which the tame fowls revert, under favourable conditions, to the wild ancestral type.

From Tenasserim, where alone, within our limits, he has seen much of them, Davison records that "this species was extremely abundant in the bamboo forests about Pahpoon, and to the north of that place, and I have found it not uncommon over the rest of the province, except in the higher hills. It frequents all kinds of localities, dense forest, thin tree, bamboo and scrub jungle. It comes out in the morning and evening into the fields and clearings, retiring during the day to cover. They are always found in larger or smaller flocks, consisting of males and females ; when disturbed they usually rise at once and disperse in different directions ; when the female is sitting or has young ones, she keeps apart from the flocks, and generally keeps to cover, seldom coming into the open until the chicks are well grown and pretty strong on the wing.

"On one occasion, near Pahpoon, I counted thirty males and females seated side by side on one enormous bent bamboo. Mr. Hildebrande was with me, or I should not have ventured to record the fact. I counted them carefully through my binoculars. They were at the other side of the Younzaleen, I guessed about 70 yards off; I loaded a large duck gun with big shot, fired at the lot and—apparently did not touch one."

No one specially notices the extreme pugnacity of these birds in the wild state, or the fact that where they are numerous they select regular fighting grounds much like Ruffs.

Going through the forests of the Siwáliks in the north-eastern portion of the Sahâranpur district, I chanced one afternoon, late in March, on a tiny open grassy knoll, perhaps ten yards in diameter and a yard in height. It was covered with close turf, scratched in many places into holes, and covered over with Jungle-Fowl feathers to such an extent that I thought some

Bonelli's Eagle, a great enemy of this species, must have caught and devoured one. Whilst I was looking round, one of my dogs brought me from somewhere in the jungle round a freshly-killed Jungle-Cock, in splendid plumage, but with the base of the skull on one side pierced by what I at once concluded must have been the spur of another cock. I put up for the day at a Bunjara Perow, some two miles distant, and on speaking to the men found that they knew the place well, and one of them said that he had repeatedly watched the cocks fighting there, and that he would take me to a tree close by whence I could see it for myself. Long before daylight he guided me to the tree, telling me to climb to the 4th fork, whence, quite concealed, I could look down on the mound. When I got up it was too dark to see anything, but a glimmer of dawn soon stole into the eastern sky, which I faced ; soon after crowing began all round, then I made out the mound dimly, perhaps 30 yards from the base of the tree and 40 from my perch ; then it got quite light and in a few minutes later, a Jungle-Cock ran out on to the top of the mound and crowed (for a wild bird) vociferously, clapping his wings, and strutting round and round, with his tail raised almost like a domestic fowl.

And here I should notice that although, as has often been noticed, the wild cocks always droop their tails when running away or feeding—in fact almost whenever you see them—yet I believe from what I then and once subsequently saw, that, when challenging rivals, they probably always erect the tail, and I know (having twice so surprised them before they saw me when watching for Cheetul and Sambhur from a *machán*, near water in the early morning) that when paying their addresses to their mates, they do the same during the preliminary struts round them.

I learnt so much and no more ; there was a rush, a yelp ; the Jungle-Cock had vanished, and I found that one of my wretched dogs had got loose, tracked me, and was now careering wildly about the foot of the tree.

Next day I tried again, but without success. I suppose the birds about had been too much scared by the dog, and I had to leave the place without seeing a fight there ; but putting all the facts together, I have not the smallest doubt that this was a real fighting arena, and that, as the Bunjara averred, many of the innumerable cocks in the neighbourhood did systematically fight there.

Only a week later I shot two cocks, who were tumbling head over heels, a confused mass, with wings and legs interlaced in an incredible manner, and on several other occasions, when watching and waiting, concealed and in silence, for larger game, I have witnessed desperate battles between cocks who happened to meet, attracted by each other's crows and flappings of wings, near my tree ambush.

THE RED JUNGLE FOWL breeds alike in hills and plains, from almost sea level up to three, four, or even five thousand feet elevation according to locality.

According to my personal experience in the Himalayas and sub-Himalayan tracts, its eggs are normally only to be found between the 1st April and the end of June, and the higher the nest the later they lay, but others talk of finding the nests in January, February, or March, and I therefore suppose that they lay earlier further south.

The hen makes her nest in any dense thicket, bamboo clumps, it is said by preference, though I have not noticed this to be the case, composed of dry leaves, grass, and stems of soft herbaceous plants. Sometimes the nest is large and comfortable; sometimes it looks as if the bird had made no nest and merely laid on a heap of dry leaves that it found handy, hollowing a receptacle for the eggs by the pressure of its body. Sometimes, again, the bird has clearly scraped a hollow in which to place the nest, and sometimes it has scraped up the earth all round, so as to make a sort of rim to the nest and keep the materials firm.

Many years ago, shooting in May for a month in the Siwáliks, chiefly along the southern side, my people and dogs between them used to find me a nest almost every day, and once we found six within a circle of 200 yards near the Bhinj-ka-khol. A large *lota* of water was carried, and one or two eggs out of every batch were tested to see if they would lie flat at the bottom, stand on end, or float; of course we took only the former, and these I used to eat boiled, roast, and in omelettes, until I got perfectly sick of them. In those days, (I say it with pain and humiliation) the only use I ever put eggs to was to eat them, and in this particular case I was punished, for since I took to collecting eggs fate has so willed it that I have never seen a single nest, and have only quite recently succeeded in obtaining a good series from different localities. Well, in all the many nests I have seen, I *never* found more than *nine* eggs, and as well as I can remember five or six were the usual complement, even where the eggs were hard-set and floated. Other people speak of finding many more eggs in a nest. Wardlaw Ramsay, for instance, took a nest in Karenee on the 14th March containing eleven eggs!

Captain Hutton says:—"The Common Jungle-Fowl is abundant in some parts of the Dún, and in summer ascends the outer hills to 5,000 feet elevation. It lays its eggs on the ground with little preparation of nest, contenting itself with scraping together a few dry leaves and grass; the eggs being from four to six generally, though often more, of a dull white, and very similar to those of Common Bantam Fowls, with which it will readily breed if domesticated from the egg.

"I have often reared the chicks under a domestic hen and turned them loose, but after staying about the house for several

days, they always eventually betook themselves to the jungles and disappeared. If kept confined with other fowls, however, they readily interbreed, and the broods will then remain quiet under domestication, and always exhibit, both in plumage and manner, much more of the wild than of the tame stock, preferring at night to roost on the branches of trees. Mr. Blyth has remarked that his cross-breed eggs never produced chicks, but I have never found any difficulty in this respect. The crowing of the cock birds is very shrill and like that of the Frizzled Bantams. In the wild state it is monogamous."

Dr. Jerdon states that "the hen breeds from January to July, according to the locality, laying eight to twelve eggs, of a creamy white colour, often under a bamboo clump or in some dense thicket, occasionally scraping a few leaves or a little dried grass together to form a nest."

In the FIELD, "Ornithognomon" writes: "The period of incubation varies, according to locality, but is generally at the beginning of the rains, *i. e.*, June. I have seen eggs, however, in March. The hen selects for the purpose of nidification some secret thicket in the most retired and dense part of the jungle, scraping together a few leaves on the ground by way of nest. She remains as part of the cock's seraglio until some seven to ten or a dozen eggs have been deposited in the above spot, to which she stealthily repairs every day, and finally quits her party and retires alone and unseen to perform the duties of incubation. The chicks are hatched as usual in about twenty days, and run about, following the mother, as soon as they have emerged from the egg-shell; and she leads them about, teaching them how to find their own sustenance, till they are big enough to shift for themselves, by which time the young cocks, finding that they cannot in honour come within a few yards of each other without a battle, separate, each one taking some of his sisters with him. These particulars I have gathered from native informants; but I can add from my own experience that either the season of incubation is uncertain, or that the hens lay in the cold season with no more ulterior views than the domestic birds, for both in February and March I have heard them emit that peculiar cackle *tuk-tuk-tuk-tuk-tukauk!* by which every one knows a hen in a farmyard proclaims to the good housewife a fresh acquisition to her larder."

A good deal of this is purely "native." In the *first* place, the nests are not really generally so very carefully hidden; they are in thickets no doubt, but fully half of them are so far open that no one given to bird-nesting could possibly pass them. In the *second*, go near the nest when you like,—morning, noon, or evening,—be there one egg or six in the nest, your dogs are certain to put the hen up quite close. In the *third* place, how each young cock is to go away taking *some* of his sisters with him I do not know. Certainly, to judge from the young birds

one kills in October and November (when they are fat as butter and most delicious), fully as many young cocks as hens are reared. Lastly, I am quite certain that they are not always polygamous. I do not agree with Hutton that they are always monogamous, because I have constantly found several hens in company with a single cock, but I have also repeatedly shot pairs without finding a single other hen in the neighbourhood, and if you have good dogs (and you can do nothing in jungle with either these or Pheasants *without* dogs) you are sure to *see* and *hear*, even if you get no shot at them, all the birds there are.

"In the Sundarbans," says Mr. Rainey, "their breeding season lasts generally from March to May. The hen lays her eggs on the ground, usually in a shallow hole scraped for that purpose and lined with a few scattered leaves. The nest is made in the centre of some dense thicket or underwood in the midst or edge of the forest. She lays from six to eight eggs; at least I have never found more than that number in any single nest. The eggs are rather smaller than those of tame fowls in the same parts of the country, and of a slightly reddish brown colour. Many eggs are destroyed, I am told, by the so-called 'Iguana,' properly Monitor Lizard (*Varanus dracæna.*)"

From Upper Pegu, where they are quite as common in the hills as in the plains, Mr. Oates sent me eggs taken by him on the 20th March and 25th May.

He says: "In Pegu this species appears to breed throughout the first six months of the year, but more frequently in April, May, and June. Nests at all elevations from 100 to 2,000 feet above sea level."

The eggs vary much in size and shape, but typically they are miniature hens' eggs; considerably elongated varieties are, however, common. The shell is, as a rule, very fine and smooth, and has a tolerable gloss; but specimens occur in which the pores are much more marked than usual, the shell coarser and rougher, and the gloss very faint. As to colour they are normally a pale yellowish *café au lait* colour, but occasionally a redder and deeper-coloured egg is met with.

In length the eggs vary from 1·6 to 2·03, and in breadth from 1·27 to 1·5; but the average of thirty is 1·78 by 1·36.

As to dimensions—

Males, measured.—Length, 25·0 to 28·2; expanse, 27·0 to 29·5; wing, 8·12 to 9·5; tail from vent, 11·25 to 14·3; tarsus, 3·0 to 3·12: bill from gape, 1·19 to 1·37; spur, very sharp and curved, 1·0 to 1·7 in length. Weight, 1 lb. 12 ozs. to 2 lbs. 4 ozs.

Females.—Length, 16·5 to 18·25; expanse, 23·0 to 25·0; wing, 7·1 to 7·5; tail from vent, 5·5 to 6·5; tarsus, 2·3 to 2·55; bill from gape, 0·9 to 1·02. Weight, 1 lb. 2 ozs to 1 lb. 10 ozs.

The legs and feet are plumbecus or slaty, sometimes browner and purpler, sometimes darker and with a greenish tinge, sometimes paler, a kind of slaty grey. The comb, thin and deeply notched above, which is much reduced in the females, and wattles, which (though Blyth contradicts Dr. Jerdon on this point) have been wanting in all females that I have examined, vary from a deep dull red to bright crimson; the skin of sides of head, chin, throat and upper part of neck in front, smooth and red also, but usually somewhat paler, bluer and more fleshy; ear lappets, as a rule, white or pinky white in Indian birds, red like the comb in Burmese and Malayan ones; irides light red to orange red; bill dark brown to blackish dusky, paler towards tip of lower mandible, often reddish in the male towards the base; in the female horny brown above, fleshy grey below.

In a young male the naked skin of head and neck was fleshy grey mixed with dull blue; the legs dark pure slaty grey.

THE PLATE, as already noticed, is not unnatural in the position in which the male is shown, although it is but rarely that the tail is thus raised. The face is never quite uniform in colour with comb and wattles as here shown. Of course the plate is idiotically mislettered.

The chicks are the prettiest little things imaginable, with fawn-coloured heads, with a broad coronal maroon stripe framed in black, and maroon backs, with a broad creamy buff stripe on either side also framed in black. The bills yellow; legs and feet greenish.

It may be useful to notice that very odd nondescript birds may be shot of this species, which seem to be neither males nor females. I know I was much puzzled with the first of these I shot, and thought I had secured at least a hermaphrodite, but these queer looking birds are really nothing but males, who at the close of the breeding season have dropped part or the whole of the neck hackles, which have been replaced by short dusky brown feathers.

F. Waller Chromo Lith. 18, Hatton Garden, London.

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GALLUS SONNERATI

THE GREY JUNGLE-FOWL.

Gallus sonnerati, *Temminck.*

Vernacular Names.—[Komri, *Mt. Abu*; Jangli Murghi (Hindustani), *many parts of Central India, &c.*; Pardah Komri (Gondhi), *Chánda District*; Ran-kobada (male), Ran-kobadi (female), (Mahrati) *Sahyadri Range*; Kombadi, *Deccan*; Adavikode, (Telegu); Katu-koli *(Tamil)*; Koli, Kad-koli (Canarese), *Mysore.*]

THIS species is the Jungle-Fowl of Southern India; but, though common in the Assamboo Hills to the southernmost extremity of the Peninsula, does not extend to Ceylon, where it is replaced by a distinct species.

From the sea to its junction with the Indrávati* the valley of the Godávari indicates approximately its north-eastern limits. Thence a line drawn through Pachmarhi to the Nerbudda completes roughly its north-eastern boundary. Westwards the Nerbudda defines, I believe, its northern limits to within from 120 to 150 miles of the sea, where, crossing this river into the westernmost portions of the Vindyas, it runs up through Rewa Kántha and Mahi Kántha to Abú, and thence along the Arvalis to beyond the well-known Dasuri Pass, stragglers having even been obtained half way between this and Beawur.

Like their northern congener they are eminently birds of jungly and hilly or broken ground, and are not to be found at any distance from these in level, thoroughly cultivated tracts; but throughout all the hilly tracts within the limits indicated, the entire range of the Western Ghâts,† the Sátpuras, and all their southern ramifications, the Nílgiris,

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* Mr. R. Thompson says: "The Grey Jungle-Fowl is abundant in the jungles of Chánda, and I found it common in the valley of the Indrávati, at least 50 miles up from its junction with the Godávari."

† Mr. G. Vidal writes:—

"Plentiful throughout the Sahyádri Range, and especially in the tract at the summit known as the 'Konkan Ghât Mahta.' Scarcer on the eastern and western slopes.

"Throughout the Ratnágiri district, whose eastern boundary is the watershed of the Ghâts, Jungle-Fowl are found sparingly in the ravines of the western slopes. A few stragglers are sometimes seen or heard in a few of the larger and more elevated hills of this district, between the main range and the coast, where these hills, though detached from the Ghâts by steep valleys, are connected by continuous belts of forest."

Mr. Davidson, C S., tells us that—

"The Grey Jungle-Fowl is found all through the Ghâts in the Poona and Satara districts, but not straying east into the plain Deccan districts. It is fairly

Pulneys, Anamalais, Shervaroys, and the like, they occur, and, where not persecuted, in great abundance, from near sea level to at least 5,500 feet elevation. Indeed, individuals may be met with up to fully 7,000 feet, as on the higher slopes of Dodabetta.

The Grey Jungle-Fowl is a purely Indian species, and does not, as already noticed, even extend to Ceylon, where it is represented by the next species *G. lafayettii.*

I MYSELF HAVE seen but little of this Jungle-Fowl, and that little chiefly about the base of Mount Abu, and the Dasuri Pass further east in the Arvalis, and I therefore avail myself of Davison's notes on the species, amongst which he has spent many years of his life. He says :

"The Grey Jungle-Fowl occurs but sparingly about the higher portions of the Nílgiris, but is common on the lower slopes, in the low country about the bases of the hills, and throughout most parts of the Wynaad. I have found it most abundant in the jungles between Metapolliem and Kullar, and between this place and Burliar about half way between Kullar and Coonoor, I counted sixteen once (while riding up to Coonoor early one morning) feeding along the cart road here.

"Unlike the Red Jungle-Fowl, this species is not gregarious, and though occasionally one meets with small coveys, these always consist of only one or two adults, the rest being more or less immature. As a rule, they are met with singly or in pairs.

"The crow of the male is very peculiar, and might be syllabled, '*Kuck-kaya-kya-kuck*,' ending with a low, double syllable, like '*Kyukun, Kyukun*,' repeated slowly, and very softly, so that it cannot be heard except when one is very close to the bird. Only the males crow, and that normally only in the mornings and evenings, though occasionally they crow at intervals during the day when the weather is cloudy. The crow is very easily imitated, and with a little practice the wild birds may be readily induced to answer.

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common in the Pánch Maháls wherever there are any hills, but is very rare in the low lying jungles. It was rare, but I saw it in several places in the Tumkur district in Mysore."

Mr. E. James again writes :

"I have myself seen the bird all along the Sátpura Hills and along the Western Ghâts from Khandesh to Kanara. Along the Arbyle-Ghat Road, Jungle-Cocks are to be seen picking grain out of horsedung and cowdung just like Barndoor Fowls, merely running into the dense jungle on each side as soon as any one approaches."

Darling says :

"I have seen and shot this Jungle-Fowl on all parts of the Nílgiris from the highest summits to the plains about their bases, in Kullar and Metapolliem ; in the Guzle Hutti Pass and all over the Wynaad ; in the Calicut district and Walliar jungles."

Mr. McInroy remarks :

"After the paddy is cut near Húnsúr, (S. W. Mysore) they literally *swarm* in the fields for some two to three months, feeding upon the fallen grain. The cock is a very wide-awake gentleman, and I have frequently seen him, on detecting danger, make off silently to the jungle, leaving his hens to their fate."

"They do not, however, crow the whole year through, but only from October to May, when they are in full plumage.

"When flushed by a dog in the jungle, they flutter up into some tree above with a peculiar cackle, a '*Kuck-kuck-kuck*,' which, however, they only continue till they alight.

"They come into the open in the mornings and evenings, retiring to cover during the heat of the day, unless the weather is cloudy, when they may be met with in the open throughout the day.

"Though found in evergreen forests, they seem to prefer moderately thin and bamboo jungle.

"Ordinarily, as already remarked, they are found scattered; but when a tract of bamboo comes into seed, or any other particular food is locally abundant, they collect there in vast numbers, dispersing again as soon as the food is consumed. I remember on one occasion when the undergrowth of the *Sholas* about Pykarra (which consists almost entirely of *Strobilanthes sp.*) seeded, the Jungle-Fowl congregated there in the *greatest* numbers, I mean by hundreds, and were excessively numerous for more than a fortnight, when they gradually dispersed, owing, I believe, not so much to the seeds having all been eaten, as to what remained of them having sprouted and so become uneatable.

"In some ways they are not very shy; by taking an early stroll, even without a dog, along some quiet road by which cattle and grain pass, several can always be obtained, but when they have been at all disturbed and shot at, they become very wary, and even with a dog, before which they ordinarily perch at once, they are very difficult to secure. In such cases, they run till they think they are out of shot, and then rise, and instead of perching, take a long flight, often of many hundred yards, and when they do alight, commence running again.

"When out feeding they do not usually wander far from cover, and on any indication of danger they dart back into this. They do not, however, go far in, generally only for a very short distance, before stopping to listen, when, if all seems quiet, they reappear in a short time within a few yards of the spot at which they entered. If, on the contrary, after listening they think that there is still danger, they then retreat quietly and silently into the far depths of the jungle; occasionally, after they have got some distance flying up and hiding themselves in some bushy tree.

"When, however, as sometimes, though rarely, happens, they are surprised some distance out in the open, they do not run, but rise at once and fly for the nearest cover, either perching in some leafy tree, or else dropping to the ground.

"They are very punctual in their appearance at particular feeding grounds, and when one or more are met with in any particular spot, they are certain, if not disturbed in the interim, to be found again in the same place at about the same hour

the next or any subsequent day on which they may be looked for. There was one particularly fine and remarkably shy and cunning old cock that frequented an open glade in the forest (above the Government Cinchona Plantations at Neddivuttum) in the *morning*, whereas in the *evening* he always came into the plantation and wandered about under the cinchona trees, and along the plantation roads. He never, to my knowledge—and I must have seen him fifty times at least—came into the plantation in the morning, or into the glade in the evening. There was no doubt as to this being the same bird that frequented the two places (nearly a quarter of a mile distant), for he was the largest, handsomest, and to judge from his spurs, the oldest cock I ever saw. 'I loved that cock as a brother I did,' and *at last* I circumvented and shot him.

"The best time to shoot the Jungle-Cock is from October to the end of May, as then his hackles are in the best condition.

"In June the moult begins, and the male gradually drops his hackles and long tail feathers, the hackles being replaced by short feathers, as in the female; during the rains the male is a poor mean looking object, not in the least like his handsome self in the cold weather, and, fully conscious of this fact, he religiously holds his tongue during this period.

"In September, a second moult takes place, the short feathers of the neck are again replaced by the hackles, the long tail feathers re-appear, and by October the moult is complete and our Southern Chanticleer as noisy as ever.

"The male usually carries its tail low, and when running, it does so with the tail lowered still more, the neck outstretched, and the whole body in a crouching position as in the Pheasants.

"I do not know for certain whether the species is polygamous or monogamous, but from what I have observed I should think the latter; for although the male does not, I believe, assist in incubation, yet when the chicks are hatched, he is often to be found in company with his mate and little ones.

"These birds are, I believe, quite untamable, even when reared from the egg, and though in the latter case they may not be so wild as those captured in maturity, they never take kindly to domestic life, and avail themselves of the first opportunity for escaping. It is needless to say that they cannot easily be induced to breed in captivity. I have known the experiment tried time after time unsuccessfully.

"Numbers are trapped by the professional fowlers of Southern India, and brought for sale, together with *Pavo cristatus*, and *Perdicula asiatica*, to the stations on the Nílgiris, where cocks in good plumage may be purchased for about 8 annas each. Numbers are also brought to Madras from the Red Hills, where they are even cheaper. When caught, the eyes are closed by a thread passed through the upper and under eyelids and then knotted together; a short string is then tied to one leg, and the

other end made fast to a long stick. A number of birds are placed side by side on this stick, which is then carried about on a man's head. The poor blind birds remain quite quiet, not attempting to flutter or escape.

"Except for his feathers or as a specimen, the Grey Jungle-Cock is hardly worth shooting; the breast alone is really eatable, and even at the best the breast is very dry and hard.

"They roost on trees. Continually in the early mornings, just at daylight, when out shooting Sambhur, I have disturbed them from the trees on which they had spent the night.

"Although armed with most formidable spurs, they are not, so far as my experience goes, quarrelsome or pugnacious. In the wild state I have never seen them fighting, and I for many years enjoyed peculiar opportunities for observing them. In captivity half a dozen, with as many females, will live in the same compartment of an aviary in perfect peace.

"Another proof of their non-belligerent character is to be found in the fact that the native bird-catchers never peg males out to attract others, as they do in every part of the East with all birds that are naturally pugilistic. Scores of times I have listened to two cocks crowing at each other vigorously from closely adjoining patches of cover, but neither apparently ever thinking of, as an American would say, *going* for that other cock.

"They are, I think, altogether less plucky birds than the Red Jungle-Fowl, and they are so extremely wary, where birds and animals of prey are concerned, and wander such short distances from the edges of cover, that I think very few of them fall victims to any enemy but man. There are plenty of Bonelli's Eagle and some Hawk-Eagles too in the Nílgiris, but I do not think that these ever succeed in capturing Grey, as they do elsewhere Red, Jungle-Fowl; at any rate, I have never once seen the feathers of *sonnerati* strewed about, as I have those of *ferrugineus* in Burma.

"Their great timidity and watchfulness result in their yielding much less sport than the Red Jungle-Fowl. You may get these latter in standing crops and in many other similar situations without any extraordinary precautions, but the Grey Jungle-Fowl never goes more than a few yards inside the fields, and if a stick cracks, or a sound is heard anywhere within 50 yards, he vanishes into the jungle, whence it is impossible to flush him. Only when beating the narrow well-defined belts of tree jungle that run down the ravines on the hill sides in the Nílgiris, and which we there call "*sholas*," is anything like real sport to be got out of them. Then indeed the gun at the tail end of the *shola may* get 3 or 4 good shots in succession, as they rise at the end of the cover and fly off with a strong well-sustained flight to the next nearest patch. Even thus, working hard and beating *shola* after *shola*, a man will be lucky to bag five or six brace in a day.

"The reason is, that all the well-defined *sholas* which can be thoroughly beaten are in the higher parts of the hills, where the birds are comparatively rare, while, when you get lower down, where the birds are plentiful, the jungles are so large that they cannot be effectively worked. If you merely want to *kill* the birds, you might get perhaps ten or a dozen in a short time poking along some of the roads, but they afford no sport thus, only a series of pot shots.

"I remember once watching an old cock that my dogs had driven up into a tree. For some time I peered round and round (the tree was a large and densely-foliaged one) without being able to discover his whereabouts, he all the while sitting silent and motionless. At last my eyes fell upon him, that instant he hopped silently on to another bough and from that to another, and so on with incredible rapidity, till, reaching the opposite side of the tree, he flew out silently, of course never giving me a chance at a shot.

"As for food, they seem to eat almost anything; grain, grass seed, grubs, small fruits and berries, and insects of different kinds. I have sometimes killed them with nothing but millet in their crops; at other times quantities of grass seeds, or again, after the grass has been recently burnt, the tender juicy shoots of the new grass."

I must, however, note that all my correspondents are not so convinced of the peaceful propensities of this species as is Davison. Miss Cockburn says: "The pugnacity of these birds is something incredible. On one occasion, when my brother was out shooting, he heard in the jungle near him the peculiar undertoned notes that the cocks emit when fighting. After a few minutes the sound ceased, and on reaching the spot whence the sounds had proceeded, he found two Jungle-Cocks dead, and one of his dogs by them. On examining the birds, both their heads proved to bear the marks of the dog's teeth, which could only be accounted for by the supposition that they were so busy fighting that they failed to observe the dog's approach, and were so closely pecking each other's heads that the dog seized both heads at once; for if she had seized only one, the other bird would have been out of reach before she could have made a second bite. You will admit that they only met with due retribution for indulging in such a reprehensible amusement as cock-fighting."

A brief note on the habits of this species as observed at Abú, sent me many years ago by Dr. King, may be added. He says: "The Grey Jungle-Fowl is not uncommon even now (1868) on Abú, but it is evidently far less plentiful than it was some years ago, if the accounts of Shikáris are true. It prefers low valleys at the very base of the hill, but ascends as far as the plateaux of Uriya and Jewai at the feet of the Gurusikhar (about 4,800 feet).

"Both sexes are very wary indeed, but the male is especially so. The males are mostly solitary (I speak of the habits in the hot weather and rains only), while the females keep in small groups of from 3 to 6.

"In the hot weather this species keeps on the ground all day, but rests on trees at night, whereas during the rains it is often found in trees by day also.

"In the hot weather the male is particularly noisy in the mornings and evenings, but in the rains he hardly crows at all at any time.

"The crow of the male is a broken shrill *ăk-ă-ăk-khee* given forth very deliberately, and only at intervals, as the bird stalks slowly along. When alarmed he gives out a rapid *cluck*, exactly like that of a domestic cock, calling as he runs. When much alarmed he flies silently but rapidly and strongly.

"The female gives voice but rarely, but with great volubility when she does so. Her voice is hoarse, and the call may be represented by the syllables *ăk-ă-ăk-ă-ăk* or *ŭk-ă-ŭk-ă-ŭk*. It is rapidly repeated."

Writing also from Abú, Captain Butler remarks:—

"The 'cordon' system of driving is usually adopted in shooting them here. The guns are placed behind screens made previously by the 'Shikáris' at the ends of patches of jungle the birds are known to affect, and the beaters are sent round to drive the birds up to them, forming a semi-circular line to prevent the birds escaping at the sides. It is very poor sport, you seldom or never get a flying shot, and when you do, the jungle is so thick that it is about 10 to 1 you miss. The birds, especially the old cocks, are remarkably wary, and the moment they hear the beaters they begin to run, stopping about every 50 yards to listen.

"They have a very quick eye, and alter their course immediately if they see or hear the slightest thing in front. The only way, therefore, when you know a bird is coming, is to raise your gun silently to your shoulder, turn very quietly in the direction from which it is coming, and remain perfectly motionless, and as soon as ever the bird gets within shot, fire.

"I have shot them with dogs, but that is equally poor sport. As soon as the Jungle-Fowl sees the dog, he flies up into a tree and squats upon a bough until you dislodge him from his supposed place of security with a charge of shot."

COMMON AS THIS species is over such a vast tract of country, more exact information in regard to its nidification is still a desideratum. Two eggs were taken in May when I was at Abú, but as to the breeding season and other particulars I must let my correspondents speak.

Writing from Kotagiri in the Nílgiris, Miss Cockburn remarks: "The hen forms her nest in woods on the ground,

gathering a few dry leaves and sticks about her. The number of eggs found in a nest is from seven to thirteen. They are of a dirty white or buff colour. The hen, when leaving the nest to seek food, generally covers the eggs with dry leaves, no doubt hoping by so doing to screen them from harm. These nests are found during March and April. I have on two or three occasions set Jungle-Fowls' eggs under domestic hens, and reared the young. It was amusing to see how soon they showed signs of their wild nature. When about a fortnight or three weeks' old, their wing feathers were so long as to enable them to fly up into trees at any moment, while their foster-mother stood below wondering at an accomplishment she never witnessed in her own progeny. At night they much preferred roosting on some tree in the garden, and when a few months old they invariably went off to the woods."

On the other hand, Mr. Davison, referring more particularly to his experience at Neddivattam on the other side of Ootacamund, says: "The Grey Jungle-Fowl breeds in October, November, and December. There never is any nest to speak of, the eggs being merely laid on some dry leaves, under clumps of trees, or a bush far in the jungle. The number of eggs in a nest apparently varies from six to ten."

Dr. Jerdon again tells us: "The hen lays from February to May, generally laying from seven to ten eggs of a pinky cream colour, under a bamboo clump."

Lastly, Mr. Wait, writing from Coonoor, informs me that "the Grey Jungle-Fowl also breeds here. The egg is oval, of a deep buff colour, and measures 1·75 by 1·125.

"They lay in May and June."

According to this, these irregular-minded birds lay in different parts of the Nílgiris from October to June,—a fact which requires further verification. It must, however, be borne in mind that different portions of the Nílgiris are more and less respectively under the influence of the north-east and south-west monsoons, and that this may materially affect the breeding season of this species, as it does of the Herons and other water birds.

Mr. Davidson, C.S., says: "I found it breeding in Satara, in March and April, but in Mysore in July."

Mr. McInroy writes: "I have seen chicks of about a week old, both in April and November, within a few miles of Húnsúr, (S. W. Mysore.)"

Writing from Abú Dr. King noted that "the eggs were found here from the middle of April to the end of May. The nest was described by the Bhíls and Shikáris (for I never went down to take one myself) as similar to that of the Spur Fowl (*G. spadiceus*), but larger, and like it placed in clumps of bamboo or other thick undergrowth."

The eggs vary much in size, shape, and tint, but there are two extreme forms between which all others are intermediate links—

the one is a long oval, with a fine compact hen's egg-like shell, of a very pale creamy white colour, and with only a faint gloss; the other has a comparatively coarse shell, conspicuously pitted all over with pores after the fashion of Guinea Fowls' or Peahens', but yet glossy, is of a broad oval shape, slightly pointed towards the smaller end, and of a rich, almost deep, *café au lait.*

Between these two types, which no one but an oologist would at first sight believe to belong to the same species, every intermediate form, some of them thickly speckled in parts with brownish red, are metwith.

The eggs vary from 1·68 to 2·05 in length, and from 1·21 to 1·5 in breadth; but the average of twenty-five eggs measured is 1·84 by 1·38.

THE DIMENSIONS of this species are as follows:—

Males.—Length, 28·0 to 32·0; expanse, 27·0 to 31·0; wing, 9·35 to 9·65; tail from vent, 14·0 to 16·0; tarsus, 2·85 to 3·0; bill from gape, 1·28 to 1·3. Weight, 1lb. 10 ozs. to 2lbs. 8 ozs. Length of spur, 1·3 to 1·75.

The legs and feet are yellow, or reddish yellow, and the claws black, but I have one specimen, probably a young bird, noted as having had the legs and feet greenish brown. The bill in the adult is, more or less of it, black, the upper mandible often yellowish at base, and the lower mandible also pale horny, but in younger birds the upper mandible is horny or greenish brown, and the lower mandible yellow. The irides of the adults are yellow or reddish orange, occasionally bright red, in younger birds yellowish brown.

Females.—Length, 18·0 to 20·0; expanse, 26·0 to 27·0: wing, 7·8 to 8·3; tail from vent, 6·0 to 7·0; tarsus, 2·2 to 2·55; bill from gape, 1·02 to 1·2. Weight, 1lb. 9 ozs. to 1lb. 12 ozs.

The legs and feet are brownish yellow, brownish fleshy in younger birds, in both cases dusky or dingy on the feet. The upper mandible in the adult dark horny brown, the lower mandible white, yellow at the base. In younger birds entirely pale horny brown. The irides bright red, yellower in some, duller and browner in younger birds.

In the male the whole of the large comb, bare facial skin, and large wattles are bright crimson. In younger birds the comb and wattles are smaller and not so brightly coloured.

The female has no wattles, and the rudimentary comb and bare facial skin is less brightly coloured than in the male.

The Abú birds run rather larger and considerably heavier, I think, than the Nílgiri ones.

THE PLATE conveys a good idea of the bird, but does scant justice to the brilliancy of the sealing-wax-like spots that adorn the tips of the hackles.

Fr Waller, Chromo Lith. 18, Hatton Garden, London.

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GALLUS STANLEYI.

THE CEYLON JUNGLE-FOWL.

Gallus lafayettii, *Lesson.*

Vernacular Names.—[Wali-kukulá, *Ceylon.*]

WITH this handsome species, which is entirely confined to the Island of Ceylon, I have unfortunately no personal acquaintance, and can only, therefore, reproduce what others have recorded in regard to it.

"THE CEYLON JUNGLE-FOWL," says Mr. Holdsworth, "is remarkable not only for being peculiar to the island, but also for being common in all parts of it where the country is uncultivated and there is jungle of a moderate height. Although especially abundant in the low country, it is often very numerous even on the upper hills, and is attracted to the particular localities where the "*nilloo*," the native name for some species of *Strobilanthes* growing at 5,000 feet and upwards, is, at the time, in seed.

"At daybreak the crow of the Jungle-Cock is first heard; and for an hour or two after sunrise, if the birds are at all numerous, they may be heard challenging each other on all sides. On these occasions a successful shot may sometimes be obtained by remaining perfectly still between two birds which are challenging and gradually approaching each other. Some of the native hunters are very expert in calling the Jungle-Cocks, by beating on a loose fold of their cloth, so as to produce an imitation of the sound of a bird's wings just as it is alighting: no time must be lost with the gun on these occasions, as the cocks discover the deception the moment they get sight of you, and instantly run off with drooping tails like Pheasants.

"It is not difficult in favourable jungle to approach a calling bird within easy shot; and under these circumstances I have generally found the cock strutting up and down a low horizontal branch of a tree, raising and lowering its head, and every now and then giving utterance to its peculiar crow, which has been likened to the sound of "*George Joyce.*" When the bird is tolerably close, the syllable "ek" is heard preceding those two sounds, which are so familiar to persons who have been wander-

ing in the jungles of Ceylon. In some of the wilder jungle-roads, a cock and hen may sometimes be seen feeding together; but generally the hens are very shy, and not many of them are killed."

Again, Mr. Layard tells us that:—"The Jungle-Fowl is abundant in all the uncultivated portions of Ceylon, but particularly so in the Northern and North-Western Provinces.

"It comes out to feed morning and evening, upon the roads, cultivated lands, or other open places. The cocks are generally seen alone, seldom in company with their hens, who, however, are always in the neighbourhood, and keep together, even though their broods may be of very different ages. The cocks fight most desperately, the combat frequently terminating in the death of one of the engaged parties. As they not unfrequently mingle with the fowls of the lonely villages, they cross with the domestic breed, being more than a match in courage for the plebeian dunghill cocks, and armed with tremendous and sharp spurs.

"In wet weather Jungle-Fowl keep much to thick trees, sitting disconsolately, with drooping head and tail, among the branches; they also roost in trees at night, retiring to rest early. It is rarely that a bird can be flushed; but when they do fly, it is very much in the manner of the Pheasant; they run with incredible swiftness, and trust to their powers in this respect for safety. Their cry is a short crow, which resembles the words *George Joyce*, sharply repeated."

The following ancedote, though often told, is too good to be omitted. Layard says:—

"I once saw a fight between a tame and a wild cock, which terminated most ludicrously; the owner of the tame bird ran in and requested the loan of my gun to shoot the stranger. I asked him if he could shoot, when he drew himself up with 'Sare, I one soldier before:' of course he had the gun directly, and taking a murderous aim from the window, he fired, knocked over his own bird and missed the Jungle-Fowl. His mortified face I never shall forget; and his soliloquy over the body was *almost* as fine as Hamlet's."

My friend Captain Legge, whose splendid monograph of the Birds of Ceylon should be in every ornithologist's hands, writes to me:—

"The Ceylon Jungle-Fowl inhabits in abundance the greater part of the island. In the low country it is located in the greatest numbers in the northern, eastern, and south-eastern divisions, which, covered with jungle and possessed of a dry climate, are specially suitable to the habits of the bird.

"Throughout all the northern forests, from the Jaffna Peninsula along the base of the Matale ranges, and thence eastward and westward to the coasts, it is universally spread, and is particularly numerous in the scrubby maritime districts.

Along the south-east coast the vegetation is of this character, and the dense tangled 'bushes' from Tangalla northwards past Tala, and thence on towards Batticaloa, teem with Jungle-Fowl.

"In the damper jungles of the south-west, and those clothing the interior of the Western Province, it is far less numerous; and in the Colombo district it is a bird which is not frequently met with.

"In the Kandyan Province it is a well-known bird, inhabiting the jungles in the coffee districts, and ascending during the dry season into the forests of the main range, in which the *nilloo* plant is very abundant, the berry of which has for it the most irresistible attractions.

"The cock birds are, as is the case with other species, most pugnacious, and pass their time in the mornings and evenings in giving out their well-known challenge call, '*Cluk George Joyce*," accompanied with the usual galline flap of the wings. By using a pocket-handkerchief doubled up into a ball, placed in the palm of the hand, and struck with the other, this sound can be fairly imitated, and if the sportsman be out of sight, well concealed in a hollow in the ground, or behind a huge log or stump, the cocks can be enticed near enough to be shot; they are so shy, however, that if the least sound be made other than this flapping, they turn round and disappear at once into the thicket. The natives produce the required sound by striking the thigh with the open hand, slightly curved; and both Cingalese and Tamils shoot the Jungle-Fowl for the market by thus decoying them.

"While challenging each other, the males often wander close to paths and tracks through the jungle, and still keep up their call, although people may be passing, and laughing and shouting going on; but directly you strike off the road to stalk them, the sound of footsteps puts an end to the *George Joyce*, and the pugnacious bird may be heard rapidly beating a retreat over the fallen leaves.

"At night they roost on trees, but do not choose very high branches, generally seating themselves across a moderately elevated horizontal limb, and when going to rest they utter a clucking note very different to the ordinary call.

"The hens are seldom seen near the cocks, and are very shy; they may be sometimes surprised in the early morning scratching by the sides of roads with their young brood, but on the whole are much more seldom observed than the other sex."

The Messrs. Hart remark:—

"This species is very local in its distribution, but it equally inhabits both high and low lands. It is, however, most common and easily procured in dry and sandy places where bamboo jungle and dense prickly thickets abound.

"It lives chiefly upon various kinds of wild seeds and grain, and more especially on white ants. We have often seen this

species enter cultivated fields in large flocks, scratching and picking up the grain with great ease until disturbed by the approach of some passer-by."

AS TO THEIR nidification Mr. Layard says: "The hen selects a decaying stump or thick bush for a nesting place, and lays from six to twelve eggs of a rich cream colour, finely mottled with reddish brown spots. Axis, one inch nine lines; diameter, one inch four lines. The young when just hatched resemble young chickens, and the old mother leads them to decaying prostrate trees and scratches for white ants, which they eagerly devour. They are hatched in June."

Captain W. V. Legge, writing to me from Ceylon, says: "Like *Galloperdix zeylonensis*, the Ceylon Jungle-Fowl would appear to nest throughout a considerable portion of the year, or else during the north-east monsoon, at different times, the same pair rearing more than one brood and thus continuing to lay until late into each season; the latter may no doubt be the correct hypothesis. The facts of the case are these however; young broods may be seen about with the parents in the south-west of the island as early as February. I have seen the same in the south-east at the beginning of July, and have taken eggs in the southern mountains on the 8th August.

"The nest is situated in the jungle or forest, under the shelter of a tree, log, or bush, and consists of a hole or slight hollow scraped in the ground and a few leaves for lining. I have found it placed close to the trunk of a forest tree between two projecting surface roots. The eggs are from two to four in number, and vary in size and depth of ground colour, and also in the quantity of the scanty markings which characterise them.

"Four specimens varied from 1·62 to 1·77 in length, and from 1·26 to 1·35 in breadth. Two taken from the same nest are reddish buff with minute calcareous specks on the whole surface. The other two are stone white, finely stippled all over with minute points of reddish grey, the former with a few faint small spots of the same hue at the obtuse end, the latter spotted more numerously at the same end with brownish red.

"The young brood continue with the mother for about two months, by which time they are three parts full grown. They seem to evince considerable attachment to the parent, as I once shot a hen in the Eastern Province that was feeding by the side of a jungle track with three grown-up young ones, which evinced considerable reluctance to leave her, running to and fro for a sufficient time to have allowed me to have shot them all.

"At times when the *nilloo*, a plant whose seed the Jungle-Fowl greatly affects, is in flower, great numbers resort to the jungles of the upper hills of the Nuvara Elia District. In 1868, a friend informs me, they bred on the Haughton Plains, not far from the sanitarium, in large numbers. In April the

young broods were about with the hens, and when disturbed either took refuge in the undergrowth or flew off in the trees. My friend informs me that they were so numerous and apparently so stupefied by the juice of the *nilloo* berry, that he could have knocked over dozens with a stick as they alighted on the branches of the low jungle."

Messrs. Hart say: "This species breeds throughout a considerable portion of the year, laying 4 to 8 eggs of a dull-white hue, and sometimes mottled with feeble purplish or reddish brown spots, specks, or blotches. It selects usually bamboo clumps or dense thickets for its nesting place, but in some instances apparently prefers shady ant-hills or the hollow of a decayed tree.

"We have also on two or three occasions found the eggs of this species laid in a depression of the bare sand or on the decayed trunks of trees without any nest lining of dried leaves or grass."

One egg sent me from Ceylon by Mr. Legge, taken in June 1874, is a very regular oval, of the usual hen's egg shape, only slightly more pointed at one end than another. The shell is fine, smooth and glossy; the ground a delicate *café au lait*, everywhere minutely speckled with brownish red, and besides this sparingly spotted (the largest spot being about 0·08 in diameter) about the more obtuse end, with rather bright brownish red.

This egg measures 1·71 by 1·31.

For the dimensions and other particulars of 25 adults I am indebted to Messrs. Hart:—

Males.—Length, 19·0 to 25·0; expanse, 28·0 to 30·0; wing, 8·5 to 9·0; tail from vent, 8·0 to 14·0; tarsus, 2·75 to 3·2; bill from gape, 1·25 to 1·5; spur, 1·0 to 1·3. Weight, 2lbs. to 2lbs. 5 ozs.

Females.—Length, 15·0 to 16·0; expanse, 23·0 to 25·0; wing, 7·2 to 8·0; tail from vent, 5·0 to 6·0; tarsus, 2·1 to 2·5; bill from gape, 1·1 to 1·25. Weight, 1lb. 2 ozs. to 1lb. 6 ozs.

Bill brown; front of the lower mandible pale yellow; irides buff; comb, wattles, and naked skin about the head in some yellowish in some purplish red, the comb having a large wing shaped or oval spot of yellow occupying the middle of the posterior half, very bright at its origin immediately over the eye, and shading off at its margin into the colour of the comb; feet and legs pale yellow.

The size and shape of the yellow spot on the comb varies much.

In the female the comb is very small, almost rudimentary; there are no wattles, and the facial skin is thickly feathered, not bare as in the two other species.

THE PLATE conveys, I believe, a very excellent general idea of both sexes of the species, but the legs are totally wrongly coloured, and the bills are not right.

ONLY FOUR species of Jungle-Fowl are at present admitted, the three above dealt with and *Gallus varius* of Java* and other islands, but I think it probable that *Gallus æneus* of Sumatra, and perhaps one or two others at present degraded under the appellation of hybrids may prove to be good species.

Our three species all have a serrated comb and two lateral wattles, whereas *varius* has an entire comb, no side wattles, but the gular skin largely centrally developed.

Much, as previously remarked, has been written as to the origin of the various races of domestic fowls, but considering that we do not yet really know how many or what wild species there are, and that fowls have probably been under domestication for between 4,000 and 5,000 years, I do not think, as already hinted on other grounds, that much profit is to be gained from the discussion.

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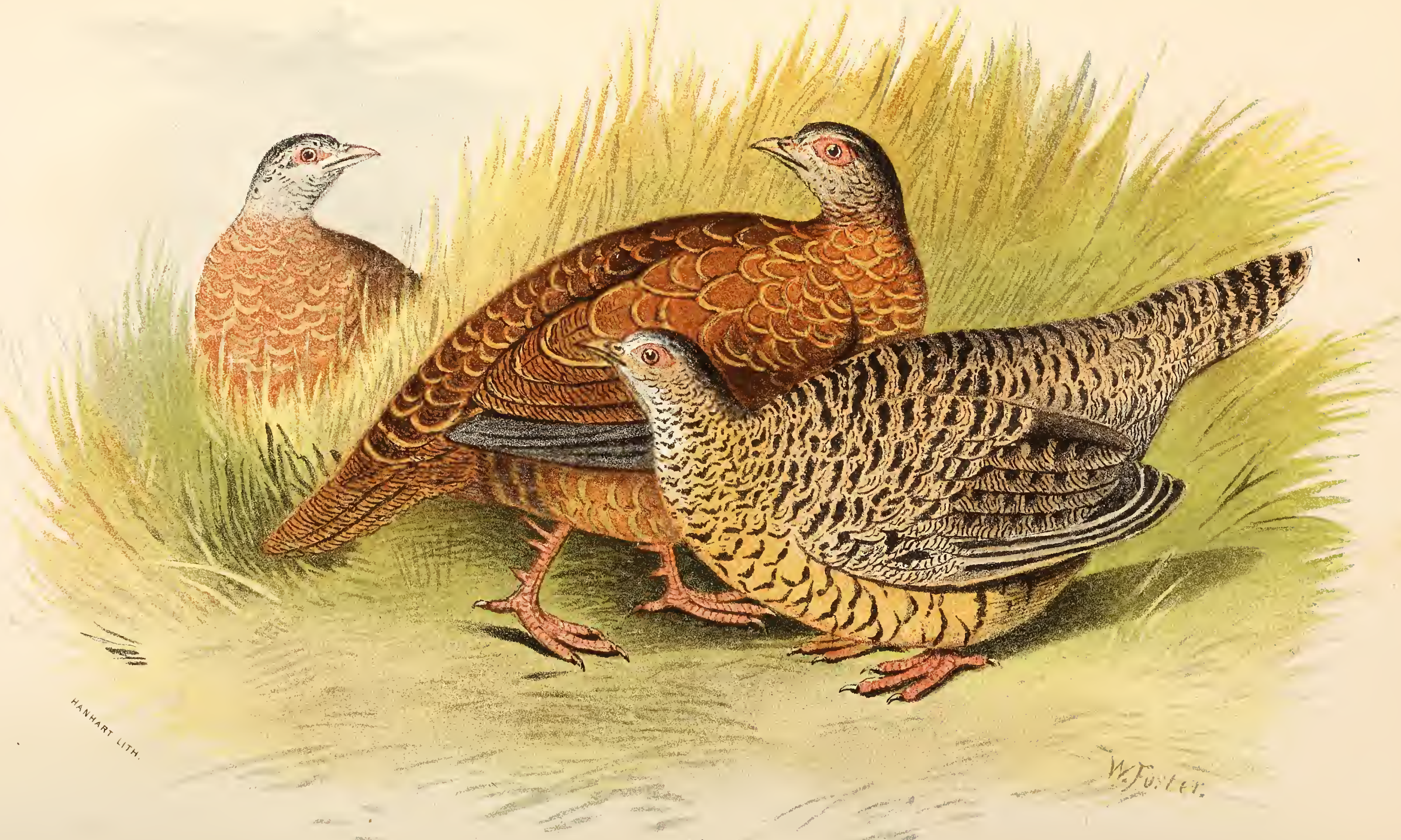
* Mr. Whampoa, at Singapore, showed Davison a very fine living male of this species, presented to him by the Maharajah of Johore, who assured him that it had been captured in his own territories.



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GALLOPERDIX SPADICEUS

THE RED SPUR-FOWL.

—o—

Galloperdix spadiceus, *Gmelin.*

—o—

Vernacular Names.—[Chota Jungli Murghi (Muhammadans) *Central Provinces, Belgaum, &c.;* Chakatri, Chakotre, Kokatri (Mahratti) *Sahyádri Range;* Kustoor (Mahratti) *Deccan;* Sarava koli, (Tamil); Yerra-kodi, Jitta-kodi, (Telugu); Ispur-koli, (anglicised Shikáris of) *Nílgiris.*]

—o—

I AM wholly unable at present to define with any degree of accuracy the respective ranges of this and the Painted Spur-Fowl.

In the first place, we have an apparently isolated colony residing in the Tarai of the central section of the Himalayas, extending from the Gorakhpur Tarai, where I have myself shot it in former years, to, at any rate, the borders of the Kheyri or Lakhimpur and Sháhjahánpur districts.*

This colony does not extend southwards to any distance from the Tarai I believe; nor does it, I conclude, get further east than Gorakhpur, since Mr. Hodgson, who obtained all the birds of the Tarai south of Khatamandoo (*i.e.*, north of the Chumparun and Tirhoot districts,) never obtained it; neither have I heard of it as far west as Pilibhít.

Setting aside this isolated colony, this species occurs nowhere else, I believe, north of a line running across India, which may be roughly indicated as commencing in the Arvalis north-east of Abu, not far from Beaur, and running thence by Saugor and the Vindhyas near Jubbulpore along the Kymore range to the Rajmehal Hills.

Even south of this line the distribution is most irregular, and there are large tracts perfectly suitable in their character (such as the Vindhyas east of Chota Oodeypore and west of Saugor) in regard to which I have no record of its occurrence.

Kharakpur and the Rajmehal Hills I give on Jerdon's authority. Baldwin shot it on the Katra Pass, south of Mirzapur, and Thomson says: "First observed on the Kymore range 80 miles south of Mirzapur; found in the valley of the Sone River; common on the Vindhyas near Jubbulpore and Mandla; abundant in suitable localities on the Maikal or Amarkantak

* Mr. Vernon has just sent me two specimens shot at Loharna on the Kathney River, 25 miles W.-N.-W. of Lakhimpur.

range east of Mandla; plentiful in the Sátpuras between the Wainganga river on the east and the Pachmarhi hills on the west."

From 30 or 40 miles west of Beaur, it is common along the Arvalis to Mount Abu, and thence in the hilly portions of Mahi Kántha and Rewa Kántha, the lower sections at any rate of the valleys of the Tápti and Nerbudda, the westernmost portions at least of the Vindhyas, Chota Oodeypore, and the entire Sátpuras, with all southern ramifications, Meilghat and Chekaldeh.

Specimens have occurred to my knowledge in Seoni, in Raipur, in Bhandára, and in the Tributary Mahäls. Ball gives it from Sambalpur south of the Mahánadi; and Tickell gives the southern part of Singbhoom as a locality for it.

It occurs in the Wardha valley near Chánda, and in Orissa north of the Mahánadi.

Further its range extends along the entire Western* Ghâts from the valley of the Tápti, (Lanauli, Khandála, Mátherán,† Mahábaleshwar, &c.) right down the Malabar Coast; over the Wynaad, Calicut, the Nílgiris, the Palghát, the Pulney and Shervery hills, and even the low hills close to Madras itself; to the lower Godávari valley and the Northern Circars to Goomsoor.

It is entirely unknown in Rajputana, west and north of the Arvalis from Beaur (which it scarcely reaches) to Abu in Northern Guzerat, Cutch, Káthiáwár, Sind, the Punjab, the North-Western Provinces, north of the Jumna, Oudh, Bengal, north and east of the Ganges, and other Eastern Provinces, excepting always the Oudh Tarai colony, which may possibly *just* extend into the Tarais of Rohilkhand and Behar.

Certainly the distribution of the Red Spur-Fowl is as yet very imperfectly understood, and it inosculates so strangely with that of the Painted Spur-Fowl, as will be seen when I come to deal with that species, that at present I can make nothing of the question. Both species seem to me to affect almost the same localities and to have exactly the same habits, to be in fact complemental species, like the Red and Grey Jungle-Fowl, or the Black and Painted Partridges, &c., and the way in which they seem to overlap each other's areas of distribution by many hundreds of miles is therefore most inexplicable. I need perhaps scarcely add that this species is essentially Indian and occurs nowhere out of India.

* "Common," writes Mr. Vidal, "in the same localities as the Grey Jungle-Fowl in all the thick forests of the Sahyádri Range, and more especially so at the summit in the tract called the Konkan Ghât Mahta. A few Spur-Fowl are also found here and there in large temple forests, with thick undergrowth, in the Thal, Konkan, or country below the Ghâts; but they are rare in such localities, and do not, as a rule, leave the thick evergreen jungles of the main range."

† "Its call," says Mr. James, "is one of the most conspicuous sounds at Mátherán, where it is very common."

THE RED SPUR-FOWL ranges from near sea level to an elevation at Abu, the Pulneys, and the Nílgiris of 4,000 to 5,000 feet; indeed, on the latter it *has* been shot at over 7,500 feet.

It is essentially a bird of forests and jungle, on hilly and broken land. It is unsafe to generalize from one's own limited personal experience, but I have the impression that the Red Spur-Fowl goes in more for forests and earth, and that the Painted one more affects scrub jungle and *rocks*. You rarely, if ever, find the Red, you constantly find the Painted Spur-Fowl in very rocky ground.

During the day they are but seldom seen and are with difficulty flushed (even with the aid of dogs) from forest patches and thickets in which they are known to be, but in the mornings and evenings they may be seen busy, feeding about like domestic fowls, amongst low brushwood or even in stubble fields on the outskirts of the jungle.

It is, however, very wary and often as you may thus observe them from some little distance, it will only be quite by chance that you succeed in getting within shot of them whilst thus feeding.

On the slightest sound, the alarm is given, and the birds disappear into the forest, either darting in on foot or flying up into trees, where, hopping from bough to bough amongst the thick foliage, or hiding in some dense tuft of parasites, they are hopelessly lost to the sportsman.

At the breeding season they are always in pairs; at other times they keep in small flocks of from five to ten.

Though I have never seen them drinking, I think that water must be a great attraction to them, for when in March and April most of the streamlets dry up, all the Spur-Fowl for miles round will be found collected in the few deep, jungly ravines, down which a little water still trickles.

The Red Spur-Fowl cooked gipsy-fashion is excellent, better, I think, than any of our Partridges, because it is more gamey; but cooked in the ordinary manner by native cooks, out in the jungles, it is dry, hard and poor.

Their food consists chiefly, according to my experience, of grain and seeds of all kinds, and small jungle fruit, the berries of the dwarf Zizyphus *(Jherbery)*, the figs of the Peepul and its congeners, but I have often found the remains of bugs, beetles, and other insects in their crops mixed with these.

Although I have shot a good many of this species, I know very little of its habits; it is a very sly lurking bird, and almost the only time one sees it is when, roused by a happy chance near one by dogs or beaters, it springs up with a strong whirring flight, and a loud screaming chuckle, or when a momentary glance is caught of it crossing some little path or darting round a distant bush. Indeed, they run so fast, and so much oftener run than fly, that I hold it in their case quite allowable to shoot

them like rabbits, and I have killed many more by firing into bushes behind which they were disappearing than on the wing. When you have the luck to flush them, they offer an easy shot and are brought down with light shot and at long distances, but if not stone dead, they can *never* hardly be found without dogs, as they not only run like greyhounds, but if badly hit will creep into any hole about the roots of trees or even in the ground.

Jerdon says that their call is a sort of crowing cry; I have never heard any attempt at crowing on their part; they are rather silent birds, but when a covey has been broken up, you may hear them after a time calling to each other with a sort of cackling cry, like that of domestic fowls when disturbed, or of an old hen after she has laid an egg. I have been unable to distinguish the sexes by their voices.

I have only seen this species in Central and Western India. Davison, who has been familiar with them in the Nílgiris, says:—

"The Red Spur-Fowl is found sparingly about the higher portions of the Nílgiris, but is more common on the lower slopes, and in the Wynaad. It is not perhaps quite so easily banished by increasing population as is the Grey Jungle-Fowl, a good number even yet surviving in the immediate vicinity of the station of Ootacamund, where, however, doubtless they are hard enough to circumvent.

"It seems to affect by preference dense and thorny cover in the vicinity of cultivation, but is also found in small isolated patches of jungle or sholas, and along the outskirts of the larger forests. It is perhaps found more numerously on the lower portions of the northern and western slopes of the Nílgiris.

"Though, as Dr. Jerdon remarks, two or three Spur-Fowl usually form part of a day's bag on the Nílgiris, they are by no means easy birds to obtain; for without dogs it is almost impossible to flush them, and I have often observed that, even with dogs, they will run before these, till they come to some dense thorny bush, when they will silently fly up out of reach and hide themselves in the thickest part, and once so concealed, it is almost impossible to flush them without cutting the bush to pieces. When flushed they rise with a cackle, and fly well and strong for a couple of hundred yards. Their flight is very like that of the Kyah Partridge. They are usually found in small coveys of four or five birds, and when flushed do not rise together, but at irregular intervals, dispersing in different directions; they are often found in pairs, and not unfrequently I have come across single birds.

"They come into the open in the mornings and evenings to feed, and wander about a good deal. Even after they have retired into the shade they do not rest quietly, but wander about

hither and thither under the trees, scratching about among the dead leaves.

"A well-wooded ravine with plenty of thorny undergrowth and with a stream of water in it, is always a favourite resort of this species."

I do not think that this species is in any degree migratory, but no doubt in many localities, in hot weather, when all springs and pools dry up, the birds shift their quarters a few miles to where water is available. With this exception, wherever it occurs, it is, I believe, a permanent resident, and there breeds.

IT LAYS ACCORDING to locality from the end of February to the middle of June, and perhaps again in October and November, although of this I am not sure. It makes a slight nest on the ground, of dry leaves and grass, often in a hollow scratched for the purpose, always in more or less dense undergrowth, and in many parts of the country, I am told (though this is not my experience), almost exclusively in bamboo thickets. It is, I judge, monogamous; certainly both cock and hen are usually to be found in the vicinity of the nest and in company with the young.

It lays from four to seven eggs, I should say, but others have found as many as ten, and I have myself seen a brood of eight chicks with one pair of old ones. The hen seems to sit unusually close; at any rate I have twice known one captured by the hand, by a native, on the nest.

"On the Nílgiris," says Davison, "the Spur-Fowl breeds in the same localities as the Grey Jungle-Fowl and makes the same slight nest. The breeding season, however, is in May and June. I have rarely found more than five eggs in a nest.

"I have found its nest three times," writes Darling; "once in the Wynaad on a rock in the jungle, with a little Citronella grass growing on it, the nest being only a few dried pieces of grass, containing five eggs, well incubated. Again on the edge of the jungle, in thick fern, with seven eggs, which were laid in a hollow with a little dried fern in it: this was also in Wynaad. The third nest was on the Nílgiris at Kartary. This nest was placed in long Citronella grass at the foot of a large tuft, and was built neatly of sticks, leaves, and grass and contained six eggs well incubated."

From Kotagiri, Miss Cockburn remarks: "They form their nest in woods on the ground among dry leaves, and generally lay from six to ten eggs of a dingy white colour, which are to be found in the months of February, March, and April."

From Abu, Dr. King writes to me: "This species is common at Abu in the valleys, ranging as high as 4,000 feet, but is most plentiful from about 1,500 to 3,000 feet above the sea. It prefers dense jungle about nalas, where there is a thick undergrowth, and especially where there is much bamboo.

"I never took the nest myself, but its eggs were brought me during the early part of May, and my Shikáris and the Bhils employed said that the nests were flat and shallow, composed of dry bamboo leaves and placed under, or even in the middle of, clumps of bamboo, in the deeper valleys."

"I have frequently seen the young broods," writes Captain Butler, "varying in number from four to eight, but have only once seen the nest which I found at Mahábaleshwar. It consisted of a slight depression in the ground, probably scratched by the hen bird, amongst a quantity of dead leaves, which formed a lining to the nest, in dense low jungle. The eggs, seven in number, were of a creamy white colour and glossed from incubation.

"I found this nest in the month of April. I should say there is no doubt about these birds being monogamous, as they are always in pairs in the breeding season."

The eggs are typically the same shape as a hen's, but much elongated and cylindrical Sand-Grouse-shaped varieties are common. All that I have seen have been entirely spotless, sometimes almost glossless, at others fairly glossy, and varying in colour from a warm pinkish buff to a delicate fawn, a pale *café au lait*, or even creamy white.

In length they vary from 1·55 to 1·85, and in breadth from 1·13 to 1·3; but the average of twenty-five eggs is 1·67 by 1·28.

THE FOLLOWING ARE some dimensions that I have recorded of adults:—

Males.—Length, 14·0 to 15·0; expanse, 18·0 to 20·0; wing, 6·2 to 6·75; tail from vent, 5·0 to 6·0; tarsus, 1·7 to 1·87; bill from gape, 1·0 to 1·2. Weight, 11 to 14 ozs.

Females.—Length, 13·0 to 14·5; expanse, 17·0 to 19·0; wing, 5·62 to 6·0; tail from vent, 4·5 to 5·3; tarsus, 1·65 to 1·75; bill from gape, 1·0 to 1·1. Weight, 9 to 12 ozs.

The legs and feet are always red, but vary in shade; old adults have them coral, or even vermilion red, young birds dull pink; and light red with a dusky shade, and orange red legs are to be seen.

The irides equally vary; dull yellow, orange brown, light brown, dusky brown.

The bills are dusky red at base, horny towards the tips, in younger birds, purplish on the upper mandible. The male has from three to one spur on each leg, very commonly one more on one leg than the other. Two on each is however perhaps the normal number. Only *once* have I seen three spurs on both legs.

The hens also have spurs; at least I have never seen a hen bird without one on one leg at any rate; generally they have one on each leg, not unfrequently a second spur on one leg.

THE PLATE is unsatisfactory. Southern specimens were figured, and in these the back and rump of the male are darker and duller in colour than is here shown, while the female should be redder and less yellow below, and darker and the pale markings more buffy, above.

It may be well to notice that the North-Western examples of this species, from Abu for instance, differ very markedly from Southern specimens, *e.g.*, those from the Nílgiris. The males are much more olivaceous and much less red, and average larger I think; moreover, in the females, the black markings are everywhere, but specially on the upper surface, smaller and less distinct, and the tone of the entire plumage is much paler. I have no doubt that hereafter some one will separate the Abu birds as a distinct species.

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GALLOPERDIX LUNULOSUS.

THE PAINTED SPUR-FOWL.

Galloperdix lunulatus, *Valenciennes.*

Vernacular Names.—[Askol, *Orissa and Singhbhoom*; Hootkah, (Gondhi) *Chanda District.*; Cull-koli, (Tamil); Jitta kodi (Telugu.)]

ALTHOUGH the two species cover so much of the same ground that this may not appear quite clearly from an enumeration of the localities where they have each been observed, yet, on the whole, the Red Spur-Fowl is the more Western, the Painted Spur-Fowl the more Eastern, form.

The Painted Spur-Fowl has no outlying colony that I know of, and its northern boundary is indicated by the Ganges, Jumna and Sindh rivers respectively. South of these, we have it recorded from Jhánsi, Lalitpur, various localities between the Sindh and Betwa in Southern Duttiah and Eastern Gwalior, from Gyah, the Rajmehal hills, from Rajmehal, Monghyr and Beerbhoom, from Singbhoom, Manbhoom, Lohardugga, Sirgooja, Jodhpore, Oodeypore, and many places in Chota Nagpore, from Seoni, Raipur, Sambalpur, north of the Mahánadi, Bhandára, the Ahiri forests, various places in the Tributary Mahàls, from Nowagarh, Kurial and other of these Bastar Feudatory States to the Godávari Valley.* These localities seem to indicate head

* Mr. R. Thompson says :—

"I am not certain that I did not meet with this on the Kymore range. I more than once saw a small Spur-Fowl, frequenting the bamboo jungles, very shy, that I could never either shoot or get a good look at, which I am pretty sure must have been this species.

"I did not see this species anywhere in the Maikal or Sátpura Ranges.

"It is, however, the common Spur-Fowl of the Chánda district alike below the Ghâts and in the Eastern Zemindaries of Pánabáras, Kotgal, Korácha, in fact everywhere on the high tableland east of the Wainganga. Found wherever there is thick bamboo cover on the hills or fringing the streams and nalas descending from them.

"It is an extremely shy bird, becoming, however, bold and familiar on being domesticated.

"It is very abundant in the jungles near my house in Chánda, where I have often seen it feeding in company with the Grey Jungle-Fowl.

"From Chánda it ranges south-east to Bastar and Sironcha. I saw it frequently in the Godávari Valley as low down as the hills north of Rájmandhry in the Madras Presidency. In these hills I found it in company with the Red Jungle-Fowl. In Central Bastar between 18° and 19° North Latitude, it was very abundant in deep bamboo jungles, where also occasionally I have heard the Red Jungle-Cock crowing.

"On the Indrávati river, 50 miles up from its junction with the Godávari river, I have seen and shot the Painted Spur-Fowl and the Grey Jungle-Fowl, without, however, having seen or heard of a trace of the Red Jungle-Fowl."

quarters of the species ; in many of them the Red Spur-Fowl does not occur at all, and in most of the others in which it does occur, it is only sparsely or as a straggler, while the present species is there in force, and as it were at home.

But though these seem to be the districts where it is most numerous, like the Red Spur-Fowl it spreads far wide of these its presumed normal limits.

It has occurred west of Nágpur near Elichpur, and then in numerous places in the Peninsula, in the Nulla-mullay range, in Kurnool, in Bellary, Cuddapah, the Eastern Ghâts inland from Nellore, about Tupapore and southwards to near Pondicherry; and again nearly all round the Nílgiris, *viz.*, between Metapolliem and Barliar, between the latter and Coonoor, near Kullar, in the Orange Valley below Kotagíri, and on the Segore Ghât, and also in the Walliar jungles in the Palghat district. Altogether, as I said when speaking of the Red Spur-Fowl, the areas of distribution of these two species are so marvellously interlaced that I cannot at present pretend to disentangle them.

NEITHER SPECIES are birds of the alluvial plains, and though a few may stray into these, their natural homes are jungle-clad hills and, in the case of the present species, especially rocky hills and their immediate neighbourhoods.

Like the last species, this Spur-Fowl also is purely Indian.

As I have only once myself shot or seen this species alive, I must content myself with reproducing what others have recorded about it.

Dr. Jerdon, our great stand-by in all such cases, says :—

"This handsome Spur-Fowl is especially partial to rocky jungles and tangled coverts, and is a very difficult bird to flush, taking short and rapid flights, and diving down into some impenetrable thicket. I have often seen it running rapidly across rocks when the jungles were being beaten for large game.

"From the difficulty of procuring this bird, it is not well known to sportsmen in general, even in districts where it is not rare, and its qualities for the table are inferior to those of the last species, having less flavour and being more dry. Numbers are snared in the hills not far from Madras, and they are generally procurable in the Madras market. I have kept them in confinement for long. They thrive pretty well, but the males are very pugnacious. The males have a fine cackling sort of call, very fowl-like."

From Raipur, Mr. F. R. Blewitt writes : "The Painted Spur-Fowl is to be met with in numbers in certain localities in the hill ranges in the Bhandára and Raipur Districts. Eastward it has been found in the low hills dividing the Pithora Native State from the Sambalpur District.

"It is especially partial to low rocky hills covered with impenetrable thicket; it also affects, though more rarely, bamboo jungle. The bird is either met with singly or in pairs; occasionally three or four congregate together. In the early morning and evening the birds descend to the more open spaces at the base of the hills to feed, and from an elevated position may be seen very busy running here and there feeding. During the day they retire to the inaccessible thickets above. Very wary is the Painted Spur-Fowl. On the slightest alarm it will run quickly up-hill to reach the shelter of its favourite haunts; once there it is impossible to flush it again. In the more open jungle they are easily flushed, and, though the flight is swift, offer an easy shot. The call is a peculiar loud *chur*, *chur*, *chur*, rapidly repeated, anything but 'fowl-like.'"

Colonel Tickell remarks:—

"In all places, however, its skulking habits cause it to be very seldom seen. It haunts rocky places buried in thorny thickets, sometimes the stony jungly beds of nalas or small rivers, but more generally the isolated granite hills covered with dense brushwood, which are so common a feature in Chota Nagpore. It is generally in beating those huge rocks with large bodies of men, when bear shooting, that the 'Askal' is seen, and I have sometimes observed two or three in the air at a time, flying straight, with rapid action of the wings, much like Jungle-Fowl. They are flushed but once; and after alighting, run into fissures and holes amongst the rocks, whence there is no dislodging them. At Palgunjo, near the Porahaut Hill, which looks in solitary grandeur over the now-deserted 'Trunk Road,' formerly the great artery of traffic throughout Bengal, I have seen one or two flushed in more open ground, where the scrub was scattered and thin—rocks at some distance, and the chief cover a few shallow ravines."

Captain Baldwin again says:—

"The male does not crow like the Jungle-Cock, though both sexes make a kind of clucking noise like a true fowl. When running these birds carry the tail up, not like a Partridge. I have often watched them when hidden behind a bush or rock, waiting for the beat to approach; sometimes over a dozen have run past me. They move very fast, and seldom take wing till hard-pressed. The flight is swift and rarely at any great height from the ground. The birds take a good hard blow to bring them down."

AS REGARDS THEIR nidification, I have never myself seen a nest, but Mr. Blewitt, writing from Raipur, says:—

"It breeds certainly from March to May, making simply a slight excavation in the ground for the eggs under the shelter of a boulder or rock in a thicket. Some time in April 1871

from such a nest, made at the base of a large boulder in dense jungle, the egg-shells were taken from which the chicks had just escaped ; again, in the same month, under the ledge of a rock in thick underwood in a slight hollow in the earth, two fresh eggs were found.

"Apparently five is the maximum number of the eggs: at least, during two seasons, of the many broods met with, no single brood of chicks exceeded this number.

"The parent birds assiduously care for their young, and when disturbed exhibit great anxiety for their safety. When closely pursued, the old birds endeavour by many artifices to draw the attention of the intruders from the spot where the chicks lie concealed, and invariably on the cry of a chick wounded or captured, the parent birds daringly return to the rescue, often to within a dozen yards or so of the sportsman."

Mr. R. Thompson also sent me eggs of this species taken in the Ahiri forests, south-east of Chánda, and remarked :—

"The nest of the Spur-Fowl was found on 5th April, when there were only two eggs in it. The eggs were placed on the bare ground, in a depression overhung by the trunk of a fallen tree, and well concealed by tufts of grass and fallen leaves. On the 9th April, when again visited, another egg was found added, and as I had to leave that part of the Ahiri forests on the following day, I had the eggs brought away."

Again Colonel Tickell says :—

"In June 1850, there was brought to me by a bird-catcher a hen with four eggs, sitting on which she had been limed. They were laid on the bare ground in a crevice, partly concealed and sheltered by a bank and the roots of an overhanging bush. There was bush jungle about the place, and it was at a considerable distance from any rock or hill. The eggs were of a whitish buff colour, in shape rather rounded, and in size 1·5 by 1·12 in."

All the eggs that I have as yet seen have been rather regular ovals, somewhat more elongated than the typical fowl's egg, and rather more compressed towards the small end.

The shell strong, but with a soft satiny feel, and a more or less decided gloss. They are an uniform delicate *café au lait*, and though taken from three different nests in widely distant parts of the country, exhibit wonderfully little variation in either size, colour or shape. They vary from 1·55 to 1·65 in length, and from 1·07 to 1·15 in breadth, but the average of seven eggs is 1·62 by 1·11.

THE FOLLOWING ARE a few dimensions that I have recorded of this species :—

Males.—Length, 12·5 to 13·6 ; expanse, 17·5 to 18·5 ; wing, 5·85 to 6·2 ; tail from vent, 4·3 to 5·0 ; tarsus, 1·5 to 1·65 ; bill from gape, 0·8 to 0·9. Weight, 9 to 10 ozs.

Females.—Length, 12·0 to 12·6; expanse, 17·5 to 18·0; wing, 5·75 to 5·9; tail from vent, 4·3 to 4·8; tarsus, 1·5 to 1·55; bill from gape, 0·85 to 0·9. Weight, 8 to 9 ozs.

The legs and feet plumbeous; the irides dark brown; the upper mandible blackish horny, the lower pale.

The male, in this species also, has from one to three spurs on each leg, generally two on each, often two on one and three on the other.

The females also generally have at least one spur on each leg, sometimes two, rarely none at all.

THE PLATE is good, but the upper mandible and the legs and feet of the male should all be much darker, and the majority of females are rather darker and more olivaceous than the particular specimen figured.

1/2

GALLOPERDIX BICALCARATUS.

THE CEYLON SPUR-FOWL.

Galloperdix bicalcaratus, *Pennant.*

Vernacular Names.—[Haban (or Uban) Kukula, *Ceylon.*]

I HAVE never seen this species, which is peculiar to the Island of Ceyon, in a wild state. Mr. Hart remarks :—

"Our Spur-Fowl is nearly confined to the Western and Central Provinces, and the northern portions of the Southern Provinces. Closely as I have explored these, I have never seen or heard of the bird in the Northern or Eastern Provinces proper, although it may just cross the borders of the Western and Central Provinces into these."

Captain Legge, the able historian of the Birds of Ceylon, on the other hand, writes to me somewhat differently and in greater detail in regard to the distribution of this species, and I can only hope that I have correctly identified the places indicated in his rather puzzling manuscript :—

"The Ceylonese Spur-Fowl has a somewhat singular range in the island. It is numerous in the jungles and forests of the south-west, in the interior of the Western Province, in the district of Saffragam, and finally in the Eastern Province, and inhabits the wooded regions of the Kandyan country, up to above 5,000 feet, ascending still higher during the cool season. How far north of the Batticaloa district it extends, I am unable to say. It is common enough in the Friar's Hood Hills, and also in similar jungles near Nilgalla, and I have no doubt is found in the forests at Bintenne, which it ought certainly to affect in common with the wooded northern and eastern slopes of the Knuckles ranges, where it is far from uncommon. In the Western Province it appears to be local, for there are many localities in which, during my wanderings, I failed to hear its unmistakable notes. In the many jungles near Atturngeria it used to be heard, and I have likewise listened to its cackling in other forests in the Hewagam Korak. About Ambepussa it is not uncommon, the damp woods clothing the labyrinth of hills in that district furnishing it with a secure retreat. On the side of the central zone I have not traced it further north than the Kurimegala district, and I do not find it recorded by my correspondents from Puttalam or Anaradjopura."

MR. HART further says :—

"Clearly the bird prefers the damper regions to the dry and sandy portions of the Island. They are never seen in the open or in any dry forest, though their familiar far-sounding notes may often be heard amongst the scrub and stunted bushes that surround the native villages.

"Very shy and subtle are they, and hard indeed to get sight of and shoot, though easily enough snared.

"They feed on various kinds of grain, but perhaps chiefly on white ants and various other insects and their larvæ."

To Captain Legge, again, we are indebted for the following note :—

"The shy habits of this bird would prevent its being detected in most places where it is even abundant, were it not for its noisy cries or cackling, so well known to all who have wandered in our Ceylon jungles.

"It frequents tangled breaks, thickets in damp nalas, forest near rivers, jungle over hill sides, and in fact any kind of cover which will afford it entire concealment.

"It runs with great speed, and has a nack of noiselessly beating a retreat at one time, while at another it ventriloquizes its exciting notes, until the sportsman becomes fairly exasperated, and gives up the attempt he has made to stalk it in disgust. I have more than once endeavoured to cut off its retreat, or flush it by rushing into a little piece of jungle or detached copse in which I had found it, and from which it seemed impossible for it to escape, but I invariably failed in the attempt, —a failure aggravated by my utter bewilderment at its unaccountable disappearance.

"The cock birds begin to call about 6 in the morning, and when one has fairly commenced, the curious ascending scale of notes is taken up from one to another, until the wood resounds with their cries.

"They always seem to keep in small parties, which perhaps consist of the young of the year with their parents.

"The natives in the Central Provinces snare them with horsehair nooses, set in spots which they are observed to frequent in the early morning.

"They do not live well in confinement, either killing themselves by fighting, or knocking their brains out by flying up against the top of their aviaries, and if they escape this fate, they are liable to die of some disease."

"Peculiar to Ceylon," writes Mr. Holdsworth, "abundant on many parts of the hills, and frequenting also jungly places in the low parts of the southern half of the island. During the winter months it is numerous in the coffee districts and upper hills, and is trapped in large numbers by the natives. It is skulking in its habits and difficult to flush, usually seeking concealment in the thicker parts of the jungle when it is disturbed."

Says Mr. Layard :—

"This species, known to Europeans under the various denominations of 'Spur-Fowl,' 'Double-spurred Partridge,' and 'Kandy Partridge,' is an inhabitant of the Central, Southern, and South-Western Provinces.

"It delights in deep tangled brakes and thick masses of canes on the sides of gentle declivities ; these it finds abundantly in the localities above cited, while in the Northern and Eastern Provinces the sandy soil and open jungles which prevail offer no congenial home to a bird of its shy and retiring habits. Even in localities where it does occur, it is more often heard than seen, for so extreme is its wariness that it rarely falls before the gun even of the native hunter, who creeps about unclad and as noiselessly as the denizens of the forest. It is captured, therefore, by means of nooses and other snares placed in its path, for its flesh is highly valued by the natives. I think it decidedly superior in flavour to any other game which I tasted in Ceylon ; it tastes and looks much like Grouse.

"It is most active during the mornings and evenings, roaming in small parties amid the open glades or bare towering trunks of the 'Mookalanee,' or high tree jungle, but on the least alarm seeking safety in the most impenetrable underwood. After remaining concealed some time, and if nothing occurs to excite their fears, a cock-bird, bolder than the rest, will utter a few low notes, not unlike the plaintive call of a turkey poult ; if this is answered from a distance or the birds are re-assured, the call is changed for a loud piping whistle, and the birds once more sally out from their concealment. I am convinced that, like the Virginian Quail, these birds possess the power of ventriloquizing in an eminent degree. I have often listened to those in my aviary, and could have declared that the calls proceeded from every part of the ground save that in which the performers were located.

"They do not thrive well in confinement, but exhibit the same wild and suspicious demeanour, always hiding behind their feeding troughs or herding in corners ; if any object approaches too closely and alarms them suddenly, they rise from the ground with a spring, and unless the roof is placed at a considerable altitude, dash their heads against it and fall lifeless to the ground.*

"They fly with great rapidity, but prefer to seek safety in concealment rather than maintain a lengthened flight. One which escaped from the basket in my house flew up to the roof and through the ventilating holes, but instead of continu-

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* All game birds do this more or less, and the first requisite for any cage or aviary for recently-captured game birds from Quail to Moonal is to provide a false, loose, cloth ceiling to the cage from 6 inches to a foot below the real roof. It is simple mismanagement when birds are allowed to hurt their heads against the roofs of their cages or hutches.—A. O. H.

ing on the wing at the elevation it had attained, it instantly dropped into a small copse, out of which it was with much difficulty hunted, when it darted through an open door into the kitchen and concealed itself behind a box.

"The males are very pugnacious, and in their manner of fighting remind me of the game cock, depressing and elevating the head, imitating each other's actions, &c., &c."

As to their nidification, Mr. Hart says:—

"The nesting season of this Spur-Fowl is not restricted to a limited period. I have found the eggs myself in February, May and October; it lays four to six eggs of a yellowish *café au lait* colour, in a dense jungle or thick forest under some prominent root of a huge tree, or sheltered by an overhanging bush or rock."

Captain Legge again remarks:—

"The nesting season of this species would seem to extend over a considerable period, as I have had fledged young brought me at the latter end of May, and have taken the eggs myself on the 7th July in the same district, the Southern Province.

"The nest is situated in the forest or in thick jungle, under the shelter of a rock or near the projecting root of a large tree. It is merely a slight hollow scraped in the ground, with one or two dead leaves in the bottom to serve as lining. I am unable to state what the average number of eggs in the clutch is, as so little is known of the nesting of this bird,—the eggs in my own collection being the only specimens I believe in the possession of any collector; they were taken from the same nest and are two in number. The natives inform me that they lay four very often, and as I had four young ones brought me once with the old bird, I dare say their information is correct. They are oval in form and rather large in diameter for their length. My two specimens measured respectively 1·42 and 1·43 by 1·12.

"They are of an uniform cream colour, one of them having small white calcareous polished specks all over it similar to those seen on the eggs of the Cochin-China fowls at times. The old bird was sitting on the nest at the time I found it, and flew off with great swiftness. This I attribute, however, to my having come on the nest suddenly, otherwise she would doubtless, as most birds which nest on the ground do in similar cases, have left it stealthily."

Eggs sent me from Ceylon are moderately elongated ovals, very similar to those of the other Spur-Fowls, of a pale *café au lait* colour, very smooth and fairly glossy, and varying from 1·44 to 1·55 in length, and from 1·09 to 1·18 in breadth.

FOR THE following dimensions recorded from numerous specimens measured in the flesh under my instructions, I am indebted to Messrs. Hart, of Colombo, who, though professional naturalists, appear to me to take great pains with work entrusted to them.

Males.—Length, 12·50 to 14·50; expanse, 19·25 to 21·0; wing, 6·0 to 6·75; tail from vent, 4·9 to 5·5; tarsus, 1·75 to 2·0; bill from gape, 0·9 to 1·0. Weight, 11 to 13 ozs.

Females.—Length, 11·0 to 12·25; expanse, 18·0 to 19·0; wing, 5·0 to 5·8; tail from vent, 4·25 to 4·75; tarsus, 1·50 to 1·75; bill from gape, 0·65 to 0·85. Weight, 7 to 10 ozs.

Iris pale brown; bill, cere and orbits pale vermilion red in adult males, and reddish brown in females; legs and feet pale vermilion red.

The cocks generally have four spurs and sometimes six.

The hens are very seldom devoid of spurs, often they have two, and three even occur.

THE PLATE represents the plumage of both sexes fairly, but the male is, I venture to think, altogether out of drawing, the plumage on its breast has got decidedly mixed, and the artist only knows how the poor thing could get along with both legs on the off side!

THESE THREE are the only known species of the genus, which belongs exclusively to the Indian region.

F. Waller. Lith. 18. Hatton Garden.

W. Foster.

1/5

TETRAOGALLUS HIMALAYENSIS

THE HIMALAYAN SNOW-COCK.

Tetraogallus himalayensis, *G. R. Gray*.

Vernacular Names.—[Kullu, Lupu, Baera, *Western Nepal;* Huin-wal, *Kumaun;* Jer-moonal, *Hills north of Mussooree;* Leep, *Kulu;* Kubuk, Gourkagu, *Kashmir;* Kauk-i-durra, *Afghanistan;* Kabk-i-dareh, *Persia;* Utar, Ular, *Turkistan.*]

THE Himalayan Snow-Cock is found in suitable localities throughout the Himalayas from the eastern portions of Kumaun to Hazára, and probably considerably further west in Afghanistan. Writing from Gilghit, Captain Biddulph tells me that this is one of the few game birds that he had met with west of the Indus.

It does not enter Nepal; Hodgson records that the only specimens he obtained were shot in the hills of Kumaun, close under the perpetual snows, and that it is not met with in Nepal.

Hutton recorded that a species of Snow-Cock, which he identified with this, was sometimes brought into the market at Kabul, and that he had four live ones at Candahar. I do not know that any Afghan specimens have since been examined, and at that time the several species had not been generally discriminated; but I do not myself doubt that it is the present species that occurs in Northern Afghanistan.

Outside our limits it occurs on the northern flanks of the Kuen-luen, as at the Sanju Pass, right away to the Pamir, and Biddulph met with it, about all the passes *en route* to Wakhan, and on the Pamir ridges, and at the top of the Baroghil Pass on the Hindoo Koosh.

The plains of Yarkand are, of course, too low for this species; but great numbers are brought into Kashgar during the winter of a pale race (not, I think, specifically separable), which Scully says come from the hills near Kugiar, which may be styled northern outliers of the Kuen-luen, but which Biddulph believes come also from the Tian-Shan.

It is impossible to be certain what species of this genus Severtsov (and he records two) obtained in Western Turkestan, but to judge from the names he uses, *himalayensis* was not amongst them.

In Northern Persia, a distinct species is found in the Elburz, but the Persians say that a second species is found in the lofty Dinar mountains in the south, just north of Shiraz, and it is not impossible that this *may* be *himalayensis*.

BARE ROCKY hill sides, ravines and passes in the higher snowy ranges, and elevated broken stony ground, at elevations of from 11,000 to 18,000 feet, and mostly on the northern sides of the first snowy ranges are the places to which, in summer and early autumn, this species resorts. In the winter they come in much greater numbers south of these ranges, and may be met with, my collectors tell me, after heavy snow as low as 7,000 and 8,000 feet in the valleys of the Beás and Sutlej.

In the northern portions of Kumaun and British Gharwál, about the sources of the Ganges and Jumna, the Sutlej valley above the junction of the Buspa, all along the southern side of the Baralatsi Range, above Samgam, and towards the Manirang-la, in Spiti, Northern Kulu and the range through which the Rohtung runs, and so on in all the higher ranges inside the first snowy range westwards to Hazára, they are said to be common, by different authorities and sportsmen whom I have consulted, but nowhere have I myself seen them in anything like the numbers in which I found them on the Parang-la route from the Tso-mourari, across Spiti to the Babba Pass. Baldwin says that he once saw upwards of fifty together below the Niti Pass, and I am sure that in one morning's march along the Parang-la I saw two hundred, in parties of from ten to twenty.

With a gun they do not, as a rule, afford any sport; when feeding they always have a watch-bird, perched erect on some projecting stone, who is scarcely to be hoodwinked, and who at any rate, when you get within 80 or 90 yards, gives the alarm and raises the whole covey. You may get them driven over you nicely at times, and you might sometimes stalk them, if it were worth the tremendous labour such stalks usually involve in the places they frequent, and occasionally by walking up to them from below, forming a line of eight or ten men covering three hundred yards or so in length, *where* the ground will permit it, one out of two or three guns may get a fair overhead shot; but as a rule, wherever I have seen them, the rifle is the only weapon with which a bag can be made. I have heard of their being met with so tame that they did not rise till approached within 30 yards, but I personally have found that 100 yards was about as near as they would ever let you approach, and then, if with a small bore single rifle you cannot secure the sentinel, it is your own fault. It is capital practice, and in the clear crisp mountain air, surrounded by superb scenery might tempt any man to pursue it as regular sport,

were it not that just the grey stones that they affect are the haunts also of the Burrel, and more rarely of the Tahr, which to most sportsmen present far greater attractions. In Spiti, however, I went in regularly for it, and my camp followers seemed to relish the birds as food, though to me they seemed, after many trials, almost uneatable.

My friend Mr. Wilson's account, as it was one of the earliest so it remains to this day incomparably the best and most complete account of this species. He says :—

"It is confined exclusively to the snowy ranges, or the large spurs jutting from them which are elevated above the limits of forest, but is driven by the snows of winter to perform one, and in some places two, annual migrations to the middle regions; in summer they are only seen near the limits of vegetation. In Kunawar they are common at all seasons from Cheenee upwards, but on the Gangetic hills, from June till August, however much a person wanders about on the highest accessible places, but few are met with, and I have no doubt whatever but that nearly all which at other seasons frequent this part, retire across the snow into Chinese Thibet to breed. About the beginning of September they are first seen near the tops of the higher grassy ridges, jutting from the snow and the green slopes above, and about the limits of forest. After the first general and severe fall of snow they come down in numbers on to some of the bare exposed hills in the forest regions, and remain there till the end of March. This partial migration is probably made in the night after the fall of snow, as I have invariably found them in their winter quarters early the next morning. It requires a deep fall to drive them down, and some mild winters, except a few odd birds, they do not come at all. The birds on each respective hill seem to have a particular spot for their winter resort, which they return to every year the migration is made.

"The Snow Pheasant is gregarious, congregating in packs, sometimes to the number of 20 or 30, but in general not more than from 5 to 10; several packs inhabiting the same hill. In summer the few which remain on our side are found in single pairs generally, but across the snow, where the great body migrate, I almost always even then found several together. They seldom leave the hill on which they are located, but fly backwards and forwards when disturbed.

"The Ring-tailed Eagle* is an inveterate annoyer of these birds; inhabiting such exposed situations where there is nothing to conceal so large a bird from his sight, as he sails along the hill side above them, they at once arrest his attention and are driven backwards and forwards by this unrelenting tormentor all day long. On the appearance of one of these birds, which

* The birds here referred to are the non-adults of the Himalayan Golden Eagle. Mr. Wilson has sent me numerous specimens.—A. O. H.

fortunately for them are not very numerous, they seldom wait till he makes a stoop, but on his making a wheel near the spot where they are, immediately fly off to another quarter of the hill; the eagle never flies after or attacks them on the wing, so that, though he allows them little quietude while near their resort, he only occasionally succeeds in securing one.

"The Jer-moonal never enters forests or jungle, and avoids spots where the grass is long, or where there is underwood of any kind. It is needless to add that it never perches. During the day, if the weather be fine and warm, they sit on the rocks or rugged parts of the hill without moving much about except in the morning and evening. When cold and cloudy, and in rainy weather, they are very brisk, and are moving about and feeding all day long.

"When feeding they walk slowly up hill, picking up the tender blades of grass and young shoots of plants, occasionally stopping to scratch up a certain bulbous root of which they seem very fond. If they reach the summit of the hill, after remaining stationary some time, they fly off to another quarter, alighting some distance down, and again picking their way upwards. When walking, they erect their tails, have a rather ungainly gait, and at a little distance have something the appearance of a large grey goose. They are partial to feeding on spots where the sheep have been kept at nights when grazing in the summer pastures. These places have been called 'tatters' by the shepherds, and the grass on them keeps green and fresh long after the rest of the hill is quite dry and brown. They roost on the rocks and shelves of precipices, and return to one spot many successive nights.

"Their call is a low soft whistling, occasionally heard at intervals throughout the day, but more generally at day-break. It is most common in cloudy weather. The first note is considerably prolonged and followed by a succession of low rapid whistles, and it is by far the most agreeable song of all our game birds. This note is only heard when the bird is at rest; when alarmed and walking away, it sometimes utters at short intervals a single low whistle, and when it gets on the wing the whistles are shrill and very rapid. However far it flies, the whistling is continued until it alights, and for a few seconds afterwards, but then slightly changed in tone to a few notes, which seem in a strange manner to express satisfaction at being again on the ground. However odd the comparison, I can compare the whistling of these birds when flying and alighting to nothing but the difference of sound produced by the wings of a flock of pigeons when flying and when alighting on some spot where they have to flutter a few seconds before they can gain footing.

"The Jer-moonal is not remarkably wild or shy. When approached from below, on a person getting within eighty or

a hundred yards, they move slowly up hill or slanting across, often turning to look back, and do not go very far unless followed. If approached from above, they fly off at once, without walking many yards from the spot. They seldom in any situation walk far down hill, and never run except for a few yards when about to take wing. The whole flock get up together; the flight is rapid, downwards at first, and then curving, so as to alight nearly on the same level. Where the hill is open and of great extent, it is often for upwards of a mile, at a considerable height in the air; when more circumscribed, as is often the case on the hills they frequent in winter, it is of shorter duration, perhaps merely across or into the next ridge.

"They feed on the leaves of plants and grass, and occasionally on moss, roots, and flowers; grass forms by far the greater portion of their food. They are very partial to the young blade of wheat and barley when it is first springing up, and while it remains short; and, should there be an isolated patch on the hill where they are, visit it regularly night and morning. They never, however, come into what may be called the regular cultivation.

"They are generally extremely fat, but the flesh is not particularly good, and it has often an unpleasant flavour when the bird is killed at an high elevation, probably owing to some of the plants it there feeds upon. They are hardy birds and easily kept in confinement, but though they will eat grain, I doubt if they would live long without an occasional supply of their natural green food of grass and plants.

"They may be kept with the least trouble in large cages, the bottoms of which, instead of being solid, are made of bars of wood or iron wire, so that the cages being put out on the grass, the birds may feed through the interstices."

I KNOW BUT little of the nidification of the Himalayan Snow-Cock.

In the Upper Sutlej Valley, Lahul, and Spiti this species lays in June, at elevations of from 12,000 to 17,000 feet. The eggs, according to native collectors, are normally five in number.

Wilson long ago told us that "the eggs, which have been found by travellers are about the size of those of the Turkey; but, like those of the Grouse, are of a more lengthened form; their ground colour, clear light olive, sparingly dotted over with small light chestnut spots."

Later he wrote to me: "The Snow-Pheasant or Snow-Cock breeds at elevations from 12,000 to 17,500 feet, but very rarely on the southern side of the snows. The hills near the source of the Ganges, and the Sutlej Valley above the junction of the

Buspa, which are breeding grounds, are in reality beyond the first Snowy Range, although a person may get to them almost without seeing snow. Both these places are breeding grounds of the Snow-Pheasant, but by far the greater number of these birds which in winter are found on our side of the Snowy Ranges go up into Thibet to breed. The business of incubation commences about the end of May, and some eggs are laid as late as the beginning of July. The nest is a hole scratched in the ground under shelter of a stone or rock, a tuft of grass or a juniper, or other bush of the high regions where it breeds. The Snow-Pheasants, and indeed all the rest of the Pheasants, exercise considerable ingenuity in picking out places for their nests, for they will almost always be found well sheltered from the rain. None make a nest,—that is, they *bring* nothing as material to it,—but nests, where grass and leaves are thick, get pretty well lined with these and feathers. I have never myself found a Snow-Pheasant's nest with more than five eggs, and of three that I have lately examined, each contained that number, but the Paháris and Tartars assure me that they lay up to nine, and even twelve, and I have certainly seen as many as a dozen chicks at a time altogether. Still it is very possible these may have belonged to more than one brood. Snow-Pheasants are eminently gregarious and do not always separate into pairs for the purpose of incubation. Where a lot of young chicks are seen, several old birds will generally be seen too. The eggs are about 2·7 long by 1·9 wide, of a greenish hue, minutely speckled with brown, chiefly at the pointed end."

By degrees he has sent me a noble series of the eggs. In shape they are long, nearly perfect ovals, slightly larger and perhaps less pointed than those of the Moonal. The shell is moderately fine and glossy, showing everywhere minute pitted pores similar to, but much less marked than, those of the Pea-Fowls. The ground is a paler or darker, more or less olive, more or less brown, stone colour, more or less thinly speckled and spotted, and at times blotched (though the blotches are never large, rarely more than 0·15 in diameter), with brownish red, pale chestnut, reddish, purplish or almost umber brown. All the spots on each egg, and I think of every egg in the same clutch, are of the same tint. The larger markings are apparently always towards the small end of the egg.

In size twenty-five eggs that I have measured vary from 2·5 to 2·8 in length, and from 1·75 to 1·98 in breadth. The average of the whole 25 is 2·72 by 1·85.

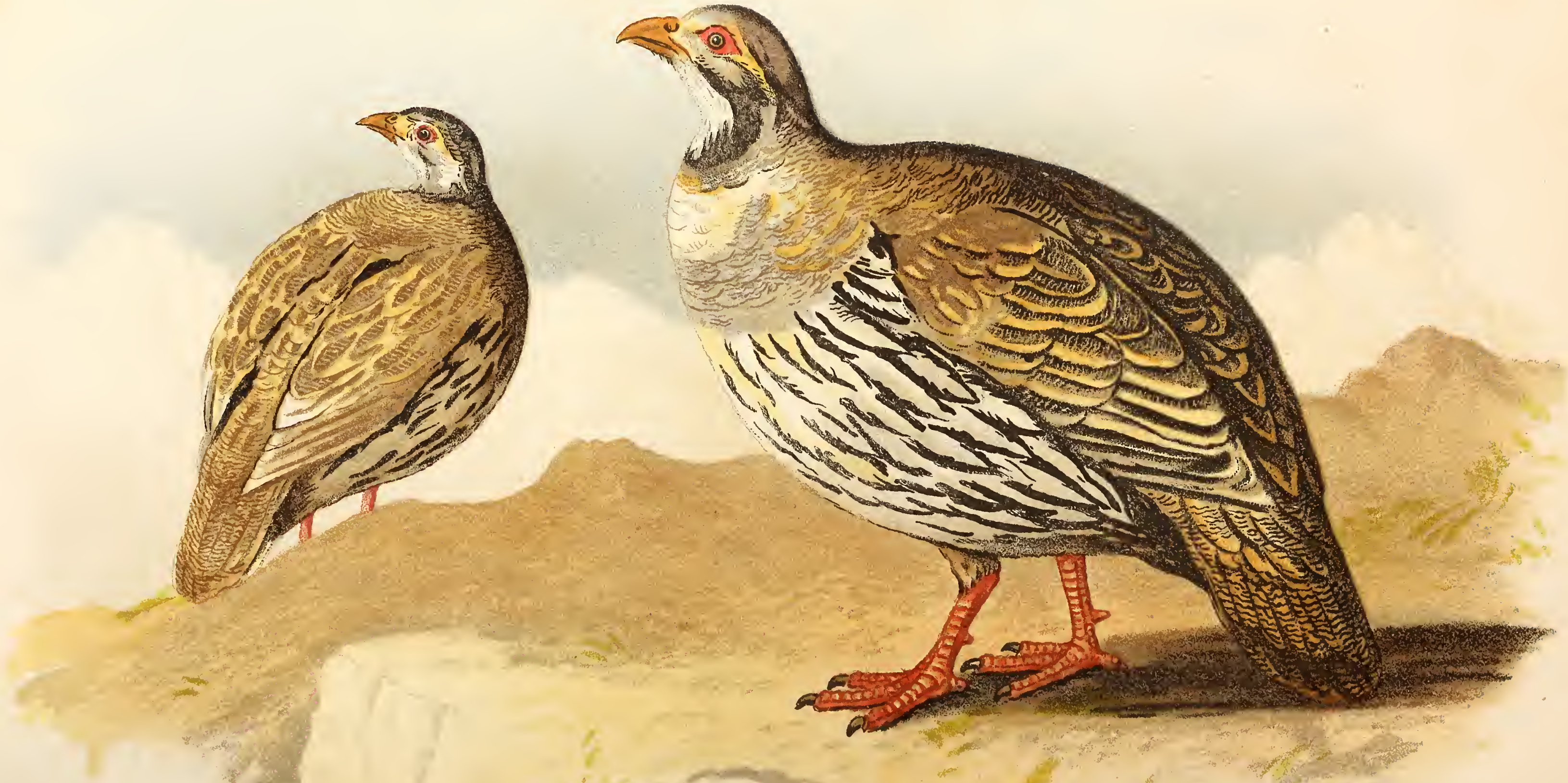
I HAVE BUT few dimensions recorded from fresh specimens of this species; these show that they vary as follows (and probably to a much greater extent):—

Males.—Length, 26·0 to 29·0; expanse, 36·0 to 40·0; wing, 11·25 to 12·6; tail from vent, 7·8 to 8·1; tarsus, 2·7 to 2·8; bill from gape, 1·35 to 1·55. Weight, 4 lbs. 10 ozs. to 6 lbs. 8 ozs.

Females.—Length, 21·5 to 23·5; expanse, 33·6 to 36·0; wing, 10·8 to 11·5; tail from vent, 7·0 to 7·4; tarsus, 2·3 to 2·5; bill from gape, 1·3 to 1·4. Weight, 3 lbs. to 4 lbs. 2 ozs.

The legs and feet are yellowish red or orange; the claws blackish horny; the irides dark brown; the lower eyelid slaty blue; the bill pale horny or slaty, dark at point; nostril scale dark orange; cere brighter and yellower orange; behind the eye is a long space of naked yellow skin. The males have a large blunt spur on either leg. The females want this, but so far as plumage is concerned are precisely like the males.

THE PLATE is on the whole good, but the legs are not sufficiently orange, and the bright orange yellow cere and nostril scale are ignored in the male, though indicated in the female.



F. Waller, Lith. 18, Hatton Garden.

W. Foster

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TETRAOGALLUS THIBETANUS.

THE THIBETAN SNOW-COCK.

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Tetraogallus tibetanus, *Gould.*

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Vernacular Names.—[Ular, Utar (Kirghiz); Hailik (Mongols); Cunmo (Tanguts).]

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I HAVE never myself met with this species, but Henderson, Biddulph and others have shot it on the Chang or Sapti-la between Ley and the head of the Pangong; Biddulph saw it at the Lanka-la above Chagra; Stoliczka found it at the head of the Spiti Valley and its smaller tributaries; I have seen two specimens shot in Kumaun north of and beyond Nanda-devi. Captain Elwes showed me a specimen shot at Phalung in Sikhim,* and Mr. Mandelli has procured many specimens along the northern frontier of that State. We may, therefore, say that the bird just crosses the northern limits of the Empire.

All our expeditions have found it at the Sanju Pass, and it probably occurs everywhere in sufficiently high and inhospitable regions on the northern side of the great range dividing India from Tibet, and pretty well throughout this latter, up in the north of which, as also in the Southern Kokonor mountains and the Chinese Province of Kansu, Prjevalski met with it.

David says it occurs about Moupin.

It is brought in great numbers into the markets of Yarkand and Kashgar during the cold season, and is said at that time, when the snow has driven them down to more reasonable altitudes, to be common in all the hills that bound Western Turkestan on the south, west and north. If this is correct, they probably occur in the Tian Shan. They *may* also occur in Eastern Turkestan, and may be what Severtsov mentions as *Megaloperdix nigellii, B. minor !*

IN THE SUMMER this species seems to range in the Himalayas to 19,000 feet, as on the Chang-lung-la, and to be very rarely if

* Although Hodgson nowhere, that I can find, mentions it, and Gray includes it in none of his Catalogues, it probably occurs along the northern frontier of Nepal also, as Mr. Hodgson's natives recorded the measurements of three fresh specimens, said to have been brought in thence, and there is a very good, though cancelled, figure of it amongst his drawings.

ever met with below 15,000 feet; in Northern Thibet they come lower down.

Their habits seem, from what little can be gleaned of them, much like those of their larger congener, but they live as a rule in even more elevated and desolate wildernesses.

Henderson says in our "Lahore to Yarkand:"—

"This bird was first met with in the Sanju Pass in the beginning of August, at an elevation of nearly 17,000 feet.

"Only a single covey was observed there—one was shot and a Falcon flying over frightened the rest, who immediately settled and squatted, so that two of them were caught alive. A month and a half later, on the return journey, they were in thousands at the same place, a continuous stream passing and repassing along the hill side throughout the forenoon just about the snow level. The Kirghiz had numbers of young ones, which their herd boys had caught.

"Later again, in October, the expedition found them very numerous in the Chang-la Pass about the snow level. They had been feeding on grain all picked out of the droppings of cattle and horses. The Kirghiz name for the bird is Utar."

Scully, again, who went over much the same ground, remarks:—

"I shot my first specimen of this species on the 24th September 1874 near the top of the Sanju Pass, at an elevation of 16,000 feet. Next day I saw hundreds of the birds in a side valley near Kichik Yailak, where they afforded me good shooting. They associated in coveys of about ten to twenty, and were not very shy. When approached from below they moved leisurely up hill, stopping every now and then to look at one, but when shot at or alarmed they flew downwards very swiftly, uttering a pleasant musical whistle. I found their flesh most delicious eating.

"Numbers of these birds were brought in to us alive, during the winter, at Kashghar (where a specimen was preserved) and at Yarkand; they were very tame in confinement. Both this species and the preceding one had evidently sought the lower hills near the plains when winter set in.

"The Turki name for the bird is Ular."

Prjevalski's account, however, is far the best and fullest that we as yet have of this species. He says:—

"Like *C. chukar*, the present species is a quick and lively bird; and its voice can almost daily be heard, at least in spring and summer, in the midst of the wildest and most desolate parts of the mountains. In the middle of the day, however, from about 11 to 3 o'clock, they do not call, but usually rest; in the morning they begin long before sun-rise.

"The voice of this Snow Partridge varies in the following ways: (*a*) when at rest it utters a note resembling that of the female Barndoor Fowl, only louder, occasionally interrupted by

a peculiar whistle something like that of a Snipe; (*b*) when alighting it calls several times in succession, sounding like *click, click, click;* (*c*) when settling down on the ground it makes a noise which sounds in this way—*Goooo, Gooooo,* several times repeated; and (*d*) when collecting its frightened young it whistles in a manner which is quite distinct from the above-mentioned sound.

"In winter they keep in small flocks up to fifteen individuals; and in April, or even earlier, they commence pairing.

"The number of young belonging to a nest varies from five to ten; and we found young ones early in August. They were very small, about the size of a Quail; whilst others were quite as a large as their parents.

"We did not succeed in finding any eggs: only on one occasion my companion discovered a nest with some broken shells in it, which evidently belonged to the present species; and according to the fragments, the eggs are larger than those of the common hen, of a dirty white shaded with green, and marked on the smaller end with some blackish brown spots.

"Both parent birds accompany the brood. Whilst the young are small they crouch on the approach of danger, or try to hide themselves between the loose stones, whilst the old ones keep on running within about twenty paces from the sportsman; but when they are full grown they try to escape by running, and follow the cock and hen which are leading the whole flock. When much pressed, however, they fly, and do not alight on the ground again until they have crossed a ravine or valley.

"These birds are very wild, and when alone the old birds do not allow themselves to be approached within a hundred paces. They hide themselves between stones, and usually spring up and take to flight, or else try to run, which they do so fast that a man cannot catch them.

"We noticed that when they are approached from the bottom of a hill they commence running, but if from the top they at once get up.

"When settling on the ground they shake their tails several times, just as our Willow Grouse do.

"Throughout August, and even in the earlier part of September, this species was moulting. The Tanguts informed us that the birds got very fat in the autumn, which, however, we did not observe in those killed at the above season in Tibet."

I HAVE unfortunately no information as to the nidification of this species.

THE FOLLOWING are dimensions recorded in the flesh of six birds, three of each sex only, and therefore probably by no

means representing fully the limits within which adults vary. As for the young they are *much* smaller.

Males.—Length, 19·0 to 21·5 ; expanse, 30·0 to 32·5 ; wing, 10·0 to 10·6 ; tail from vent, 6·5 to 7·4 ; tarsus, 2·1 to 2·36 ; bill from gape, 1·3 to 1·4. Weight ?

Females.—Length, 18·0 to 20·0 ; expanse, 29·0 to 31·5 ; wing, 9·55 to 10·2 ; tail from vent, 6·4 to 7·0 ; tarsus, 2·1 to 2·2 ; bill from gape, 1·15 to 1·3. Weight ?

The irides are brown or reddish brown ; orbits red ; the legs and feet vary, in *both* sexes as far as I can make out, from orange through every shade to almost coral red—possibly according to season, more probably according to age ; the bill is dull red to orange horny in the male, often dusky about the base (a sign I fancy of nonage), and greenish or yellowish green in the female, always apparently dusky towards the base, and paler and yellower on the lower mandible.

THE PLATE is particularly good, but unfortunately represents the male bird only.

Prjevalsky correctly exposes the error into which Mr. Gould and I fell in stating that the males and females of this species are alike. I had never myself sexed a specimen, and had to rely on others ; broken reeds as it turns out.

As a matter of fact the female has only a central stripe down the throat white, and has the whole cheeks, sides and front of the neck, and breast as far down as the grey band extends in the male, finely mottled, vermicellated, and variegated, brown and rufous buff, the brown being much darkest on the sides of the neck and in front at its base, and becoming greyer towards where this crop patch ends.

In the males the bills are reddish to orange horny ; in the females greenish horny, yellower on the lower mandible, dusky about the base.

The bill in the male is considerably larger than in the female, and he has a large, very stout, very blunt spur on each leg, while the females and younger males (though apparently nearly full sized and quite full plumaged) have no trace of this.

Prjevalsky also says :—" A male from Kansu has under the throat a large slate coloured spot, not an uninterrupted cross band running parallel to the breast band, as described by Hume, but not marked at all by Gould."

Gould, I expect, figured from an indifferent specimen or the birds may be variable in this respect,* but I have never yet seen any male entirely wanting this throat band. Of five adult males

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* Hodgson figures a specimen, not only without the *throat* band, but with only a trace, just a few scattered feathers here and there, of the *breast* band.

before me, four have the band continuous as shown in our plate; one has it interrupted as described by Prjevalsky, *but* this has no spurs. In many birds the band running down the sides of the neck and across the throat is only dark grey and not nearly so dark as in the particular specimen figured.

AT LEAST three more species of this fine genus are known, *viz.*, T. CASPIUS, *Gm.*, T. CAUCASICUS, *Pall.*, and T ALTAICUS, *Gebler*, and there is a fourth, which is doubtful. Of the first the Gök or Geyee mountains of Southern Asia Minor constitute probably the western limits. Thence it extends eastwards* through the rest of the Taurus into Armenia, Kurdistan and Northern Persia as far as Astrabad at the south-east corner of the Caspian, whence it was first described. The other two are possibly nearly confined to the mountain chains, whence their names are derived.

* Danford, *Ibis*, 1878, p. 29.